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中國蕨類植物圖譜

Chung-kuo Ko hsüeh yüan. Chih wu yen chiu so.

中國科學院植物研究所

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ICONES FILICUM SINICARUM

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INSTITUTE OF BOTANY

ACADEMIA SINICA

第五卷

FASCICLE 5, PLATES 201–250

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內 容 提 要

中國蕨類植物圖譜第五卷是我國蕨類植物學家秦仁昌教授所著的，是我國的一種國際性的學術刊物。本卷是他在 1937 年以前出版了的四卷以後的第一次續刊，格式大小仍照以前各卷，內容有大圖版五十幅，代表着五十種主要特產於我國的蕨類植物，每版除精確的自然大原圖附有放大的主要形態器官解剖圖外，還有用中英文描述的形態特徵，產地，地理分佈和主要文獻等記載，爲國內外科學機構，大學生物系，各級師範，農，林，牧，醫藥等學校在教學及科學研究工作的重要參考圖書。

中國蕨類植物圖譜

第五卷

編著者　秦　仁　昌

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第二百零一圖

崖薑蕨(水龍骨科)

PSEUDODRYNARIA CORONANS (Wallich) Ching

高大的附生植物，根狀莖爲粗大匍匐狀，厚肉質，密生蓬鬆深銹色的長鱗片，爲鑽狀長線形，邊緣有睫毛，另有毛茸的線狀根混生於鱗片間，彎曲的根狀莖盤結成爲大塊的墊狀物，由此生出一叢無柄，堅硬而略張開的革質葉，形成一個圓而中空的高冠，形體極似鳥巢蕨 (*Neottopteris Nidus* (L.) J. Sm.)；葉一型，長 80—120 厘米或過之，中部寬 20—30 厘米，長圓狀倒披針形，向頂端漸尖，向下漸變狹，至 2/3 處又逐漸擴張成爲膨大圓心臟形的基部，寬約 15—25 厘米，有寬缺刻或淺裂的邊緣，基部以上葉體爲深羽裂，再向上幾乎深裂到葉軸；裂片多數，被圓缺刻分開，中部的裂片長達 15—22 厘米，寬 2—3.5 厘米，向上斜出，披針形，基部較寬，向頂端漸尖，全緣，有加厚的葉緣，下部裂片較中部爲短，分裂較淺，爲急尖頭或圓頭，爲闊圓形的缺刻分開；葉爲硬革質，兩面光滑無毛，乾後硬而有光澤，裂片往往由深褐色光亮的葉軸以關節脫落；葉脈粗而很明顯，一回側脈斜出，開展，突出，通直，相隔 4—5 毫米，向外達於加厚的葉緣，二回側脈與一回側脈直角相交，成一回網眼，再分割一次成三個長方形小網眼，內有棍棒狀頂端的分叉小脈；子囊羣位於小葉脈交接處，限生於葉體上半部，其下半部爲不育，4—6 個生於一回側脈之間，但並不位於正中央，而是略扁近下脈，每一個網眼裏有一個子囊羣，在中肋與葉緣間排成一長列，亞圓球形或長圓形，分開，但成熟後常多少匯合成一條連貫的囊羣線，孢子二面形，腎狀長圓形，光滑透明。

分佈：雲南，廣東，廣西，海南，台灣，香港，越南，緬甸，馬納甲。

本種主要產於亞洲大陸熱帶及亞熱帶的雨林或季雨林中，在華南地區相當普遍，向北分佈到貴州南部，南達南太平洋的馬納甲。植株高大，挺拔，附生於樹幹或溪邊岩石上，爲極美麗的觀賞植物，適於温室栽培，其粗大肉質根狀莖可供藥用。

圖註：1. 本種全形（自然大）。 2. 能育裂片的一部，表示葉脈及子囊羣（放大 4 倍）。 3. 同上，放大。4. 根狀莖上的鱗片（放大 10 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 201

PSEUDODRYNARIA CORONANS (Wallich) Ching

POLYPODIACEÆ

PSEUDODRYNARIA CORONANS (Wallich) Ching in Sunyatsenia **5:** 357. 1940; **6:** 10. 1941; Copel. Gen. Fil. 201. 1947.

Polypodium coronans Wall. List n. 288. 1828 (nom. nud.); Hook. Exotic Ferns t. 95. 1857; Mett. Farngatt, Polyp. 121 n. 242 t. 3, f. 40, 41. 1857; Benth. Fl. Hongk. 459. 1861; Christ, Farnkr. d. Erde 117. 1898; Diels in Engl. u. Prante, Nat. Pflanzenfam. **1**: iv. 319. 1899; C. Chr. Ind. Fil. 518. 1905; Merr. Enum. Hainan Pl. in Lingnan Sci. Journ. **5**: 17. 1927; Wu, Wong et Pong, Polyp. Yaoshan. in Bull. Dept. Biol. Sunyatshan Univ. No. **3**: 304 t. 141. 1932.

Phymatodes coronans Presl, Tent. Pterid. 198. 1836 (nom. nud.).

Drynaria coronans J. Sm. in Hook. Journ. Bot. **4**: 61. 1841 (nom. nud.).

Aglaomorpha coronans Copel. in Univ. Calif. Publ. Bot. **16**: 117. 1929.

Polypodium conjugatum Bak. in Hook. & Bak. Syn. Fil. 366. 1868 (non Poir. 1804); Dunn & Tutcher, Fl. Kwangt. and Hongk. 352. 1912.

Drynaria conjugata Bedd. Ferns Brit. Ind. Correction, 1870.

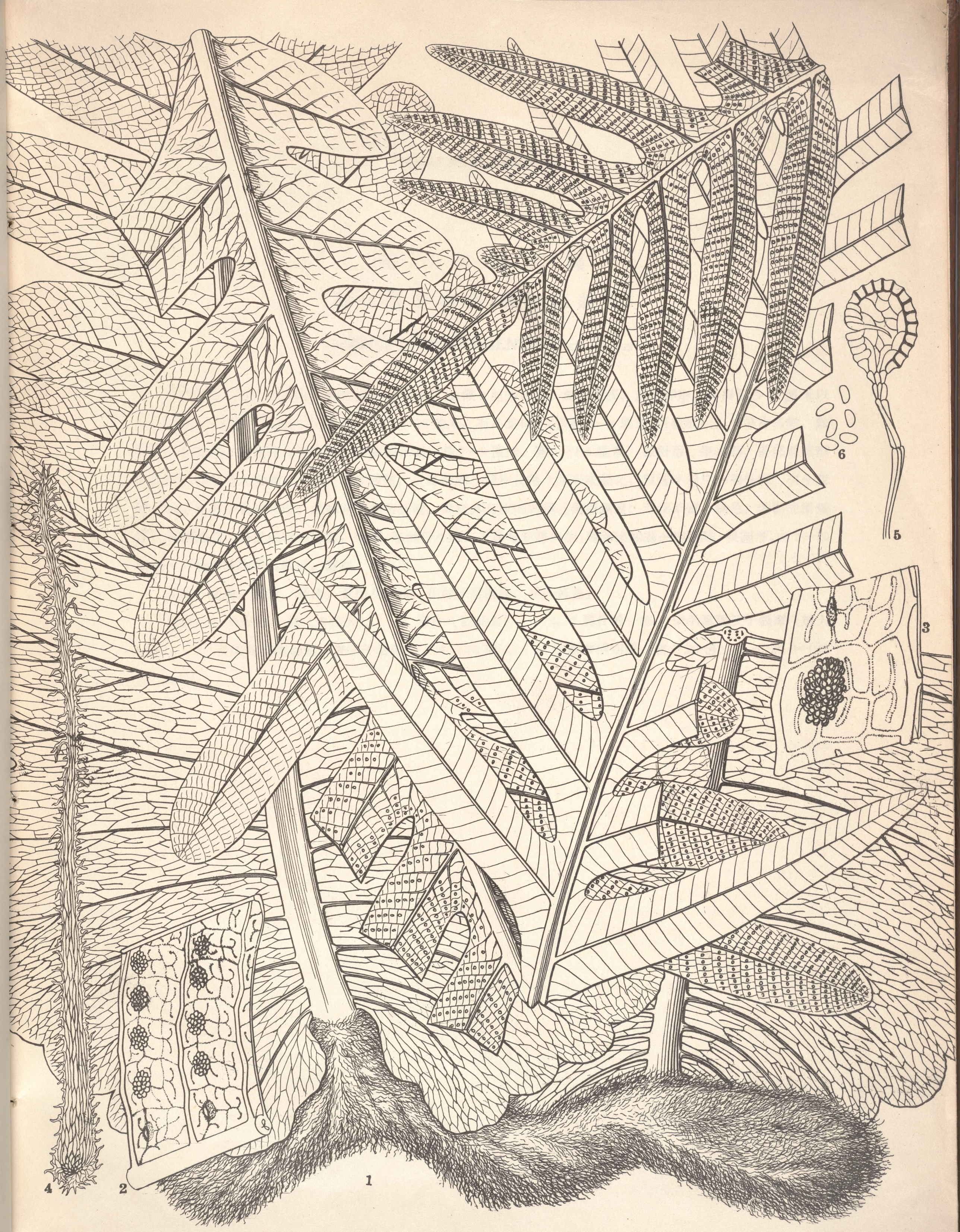
Drynaria Esquirolii C. Chr. in Bull. Acad. Géogr. Bot. Mans **13**: 139. 1913.

A large and strong epiphyte. *Rhizome* creeping, thick, fleshy, stout, and interwoven, covered by dense, shaggy, dark ferruginous, long linear-subulate scales with ciliate margin and intermixed with wiry and hairy roots, holding tortuous branches of the rhizome together and thus forming a large cushion-like mass, from which arises, in a perfect circle, a tall crown of sessile stiffy coriaceous fronds after the manner of *Neottopteris Nidus* (L.) J. Sm. *Fronds* monomorphous, 80-120 cm or even longer, 20-30 cm broad at the middle, oblong-oblanceolate, acuminate, gradually narrowed downwards to about 2/3 way down, thence again expanding gradually towards the dilated broad, rounded and cordate base, 15-25 cm across with broadly sinuate or shallowly lobed margin, above which the whole leaves are deeply pinnatifid and further up almost down to the rachis with numerous *segments,* of which the middle ones 15-22 cm long, 2-3.5 cm broad, oblique, separated by round sinuses, lanceolate from the broadened base, gradually acuminate with entire thickened margin throughout, the lower ones gradually shortened, cut down less and less deep with acute or rounded apex and separated by round broad sinuses; *texture* stiffy coriaceous, glabrous, glossy and firm when dried and all segments become detached from the strong, brown and shining rachis; *venation* distrinct and conspicuous beneath, the *primary veins* in the segments patent, oblique, quite straight, prominent, reaching the thickened margin, the *secondary veins* transverse with the primary veins and form the *primary areolae,* which are 4-angled and are again divided at right angles and their areolae are occupied by the ultimate divaricate veinlets with clavate apex; *sori* compital, confined to the upper half of the frond, its lower half being sterile, 4-6 between the primary veins, not exactly medial (but nearer to the lower vein), one in each primary areole forming a single row between the costa and margin, subglobose or oblong, and upon maturity often more or less confluent in a continuous line; *spores* bilateral, reniform-oblong, smooth, hyaline.

In China numerous specimens have been collected from the south and southwestern Provinces including Yunnan, Kwangsi, Kweichow, Kwangtung, Hainan, Taiwan and also Hongkong. Also common in Northern India (subtropical regions), Burma, Thailand, Indo-China and Malacca.

The present fern is the sole species of the genus *Pseudodrynaria* Ching and a majestic and beautiful epiphyte, endemic in the subtropics of the Asiatic mainland extending southwards to Malacca. It inhabits monsoon forests, epiphytic on tree trunks or large rocks by stream side. Highly recommanded for greenhouse culture and conservatories.

Plate 201. 1. Habit sketch (natural size). 2. Portion of fertile segment, showing venation and sori (× 4). 3. The same, enlarged. 4. Scale from the rhizome (× 10). 5–6. Sporangium with spores (× 100).



第 201 圖　崖薑蕨

Plate 201. PSEUDODRYNARIA CORONANS (Wallich) Ching

第二百零二圖

福建觀音座蓮(觀音座蓮科)

ANGIOPTERIS FOKIENSIS Hieronymus

高大植物，達 1 米以上；葉柄長約 50 厘米，直徑 2 厘米以上，葉體寬廣，爲寬卵形，長與闊各 60 厘米以上，羽片 5—7 對，長 50—60 厘米，寬 14—18 厘米，有小葉柄，(長約 3—4 厘米)奇數羽狀；小羽片多數，頗開展，具短柄，爲寬達小羽片之半的缺刻分開，長 7—9 厘米，寬 1—1.5 厘米，披針形，漸尖頭，基部亞截形或圓形，頂部向上微彎，下部小羽片較短，近基部的小羽片長僅 3 厘米或過之，頂端小羽片一個分離，有小葉柄，和下面的小羽片同形；葉軸向頂部有狹翅，葉緣具有規則的淺三角形鋸齒；葉爲草質，綠色，兩面光滑無毛；葉脈開展，分叉或罕有單脈，明顯，無倒行小脈；子囊羣爲邊內生，與葉緣相隔一短距離，長圓形，由 8—10 個或少有較多的孢子囊組成，宿存，無夾毛。

分佈：福建，廣東，廣西，貴州及香港，生林下溪溝邊，甚爲普通。

圖註：1. 葉柄的一部（自然大）。 2. 羽片（自然大）。 3. 小羽片的一部，表示葉脈及子囊羣（放大 4 倍）。 4. 子囊羣的縱切面，表示子囊羣托（放大 20 倍）。 5. 子囊羣橫切面（放大 20 倍）。 6. 孢子（放大 100 倍）。

PLATE 202

ANGIOPTERIS FOKIENSIS Hieronymus

ANGIOPTERIDACEÆ

ANGIOPTERIS FOKIENSIS Hieronymus in Hedwigia **61:** 275. 1919; C. Chr. Ind. Fil. Suppl. III. 25. 1933.

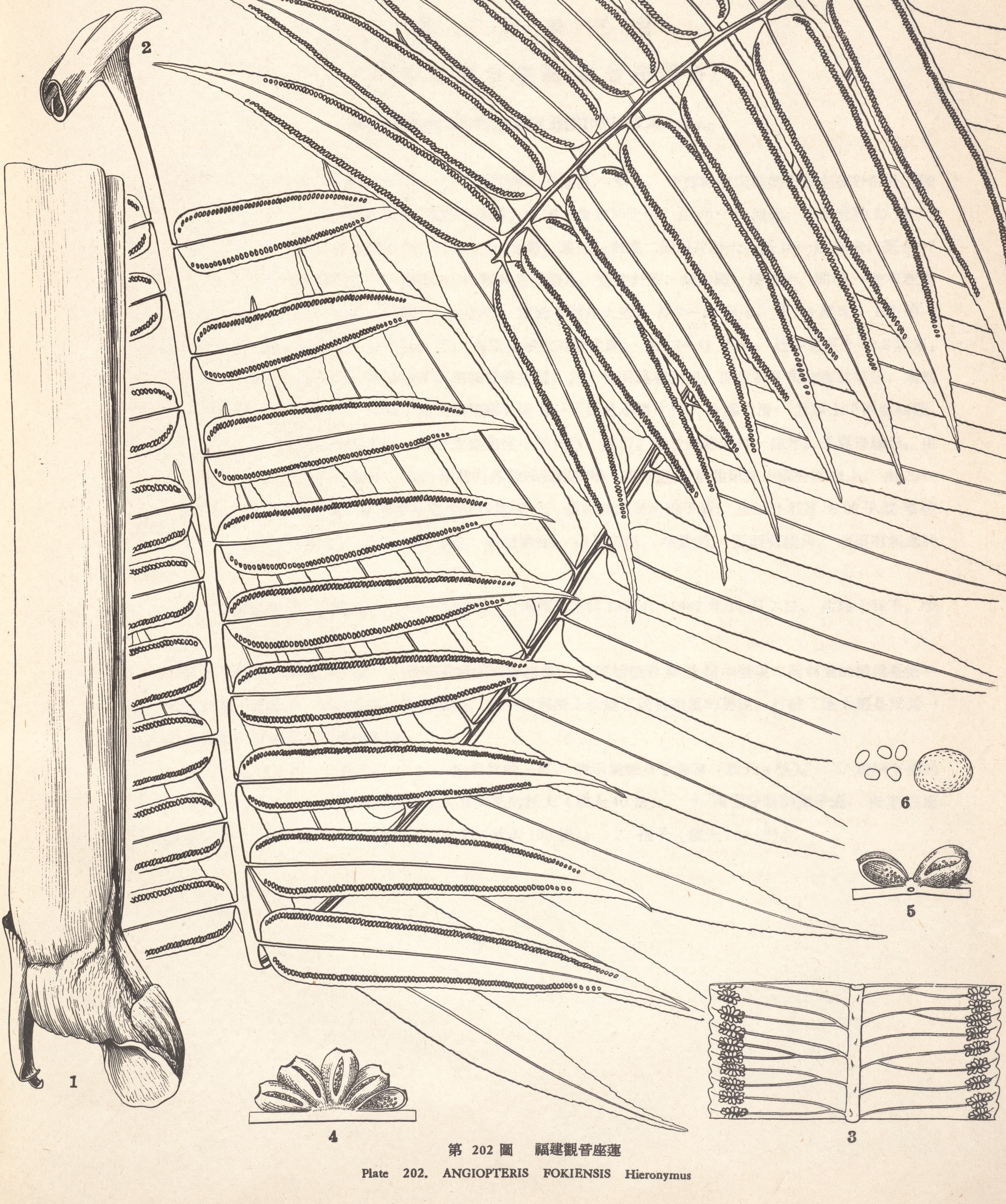
Angiopteris evecta Benth. Fl. Hongk. 440. 1861 (non Hoffm. 1796).

Tall plants, over a meter high. *Stipe* over 2 cm thick, about 50 cm high, lamina ample, broadly ovate, over 60 cm each way, bearing 5-7 *pinnae* 50-60 cm long, 14-18 cm broad, petiolate (petiole about 3-4 cm long), imparipinnate; *pinnules* numerous, very patent, subsessile, separated by sinuses half as broad as the pinnules, which are 7-9 cm long, 1-1.5 cm broad, lanceolate, acuminate, slightly up-curved towards apex, base subtruncate or rounded, gradually shortened downwards with the lowest pinnules about 3 cm long or longer, the terminal pinnule free, petiolulate, similar to those below, rachis narrowly winged towards apex, margin regularly serrate with low deltoid teeth; *texture* herbaceous, green, both sides glabrous; *veins* patent, forked or rarely simple, distinct beneath, spurious recurrent veinlets none; *sori* intramarginal, leaving a narrow sterile margin, oblong, consisting of 8-10 sporangia or rarely more, not paraphysate.

Fokien: Foochow, *De Grijs 20* ex herb. *Hance* (type); *C. B. Rickett; S. T. Dunn 3769*; Yenping, *H. H. Chung 2826, 3592* (1925). Kwangtung: Lok Chong Hsien, Kau Fung, *W. T. Tsang 20833*; *N. K. Chun 42667*; ibid., Tai Tung, *N. K. Chun 42873*; Lung Tau Shan, Iu Village, *To & Tsang 12114*; Yai Hsien, Youngling Shan, *S. K. Lau 6247*; Wa-tsa Hsien, Tou Ngok Shan, *W. T. Tsang 23226*; Sunyi Hsien, Foun Dar Lee, *C. Wang 32180*; *Y. K. Wang 30952*; Ku Koong Hsien, Lung Tau Shan, *Y. K. Wang 31674*; Oon-yuan Hsien, Wan Shi Shan, *S. K. Lau 958*; Po-lo Hsien, Lo-fou Shan, *T. M. Tsui 75*; Kwei-yang Hsien, Lin Fa Shan, *W. T. Tsang 25704*; Shek Mang, Tai Shan, *C. L. Tso 23361,* alt. 450 m.; Wan-tong Shan, *H. Y. Liang 60495;* Sin-to Hsien, Po Yin Shan, *W. T. Tsang 23094*; Tapu Hsien, Tung Koo Shan, *W. T. Tsang 21647;* Wang Hang Hsien, Tai Mu Shan, *S. P. Ko 51242;* Jao-ping, Tai-ping, *N. K. Chun 42667*; Ing-tak Hsien, *Hsui Hsiang-hou 8175*; Young-ling Shan, *S. K. Lau 6247.* Kwangsi: Kwei-ping Hsien, Univ. Kwangsi Herb. *No. 121, 40230*; Sanhoa, Yao Ren Shan, *R. C. Ching 6255,* alt. 400 m.; Lu-chen Hsien, Mung Tung Kou, *R. C. Ching 5501,* alt. 350 m. in densely shaded ravine; Lin Yin Hsien, *R. C. Ching 7288,* alt. 900 m.; Hu Hsien, *Chen Lang-Hsiang 500195*; Lo-hsiang, Yao Shan, *S. S. Sin 187A; C. Wang 40633.* Kweichow: Shan-ho Hsien, *S. C. Hou 1701*; River of Ta-thay, *Esquirol 2706*; Ly-po, *Cavalerie;* Tse-hen, *Esquirol 2653, 2766.*

Also Hongkong: *Hance* (1856); *Forbes 566.*

Plate 202. 1. Portion of stipe (natural size). 2. Pinna (natural size). 3. Portion of pinnule, showing venation and sori (× 4). 4. Longitudinal section of sori, showing receptacle (× 20). 5. Cross section of sori (× 20). 6. Spores (× 100).



第 202 圖　福建觀音座蓮

Plate 202. ANGIOPTERIS FOKIENSIS Hieronymus

第二百零三圖

二回原始觀音座蓮(觀音座蓮科)

ARCHANGIOPTERIS BIPINNATA Ching

葉柄長 60—70 厘米，直徑約 4 毫米，腹面有深溝，淡綠色，草質，下部略有緊貼的暗棕色披針形長尖頭的鱗片，基部以上約 20—34 厘米處有一個膨大的節，葉體三角狀卵圓形，長 40—50 厘米，中部寬約 22 厘米，基部爲二回羽狀，向上爲一回奇數羽狀；羽片 10—12 對，基部一對或二對羽片特大，長 16—19 厘米，寬 6—7 厘米，有 2.5—3 厘米長的小葉柄，羽裂爲 2—7 對側生小羽片，寬披針形，漸尖頭，幾無柄，開展，並有粗齒牙，長 2—3 厘米，基部以上寬約 1 厘米，圓楔形，頂端小羽片大形，長 7—10 厘米，寬 2.8 厘米；上面的一回羽片有葉柄（長 4—6 毫米），線狀披針形，向頂端漸狹爲漸尖頭，長 12—17 厘米，近中部寬 2—2.8 厘米，基部圓楔形，葉緣全部具有規則的粗齒牙；葉軸乾後壓扁，向上端兩邊有狹翅；頂生羽片與相鄰的同形；葉爲草質，乾後仍爲綠色，除葉軸，中肋下面及葉柄膨大處有一些棕色小鱗片外，全爲光滑；葉脈上下兩面明顯，脈間距離 2 毫米，一般爲單脈或分叉，幾乎成直角從中肋伸出，直行，達於葉緣的每一齒牙；子囊羣線形，生於上部一回羽片上的，長約 5 毫米，由近中肋向外伸展到距葉緣 4 毫米處，沿生單脈上或分叉脈上，由 20—40 個孢子囊組成，在孢子囊下面有許多密生分枝的夾毛，長等於或過於孢子囊；生於小羽片上的子囊羣較短，由 10—12 個孢子囊組成，從小中肋出發，幾達葉緣；孢子暗色，半透明，圓而有稜角，表面有粗疣狀突起。

產地：雲南東南部，馬關縣、金口（老君山），馮國楣號碼 13679，1947 年 11 月 7 日，生雜木林下，少見，海拔 1100—1300 米。

本種爲本屬中最特殊的一種，一般形體酷似觀音座蓮；在原始觀音座蓮屬中發現二回羽葉的種還是第一次，這是有很大意義的，因爲由這一種的發現，在一定程度上改變了過去對屬的界說，打破了過去總是認爲一回羽葉爲本屬的特徵之一的傳統看法。

圖註：1. 本種全形（自然大）。 2. 一回羽葉的一部，表示葉脈及子囊羣（放大 4 倍）。 3. 葉柄下部的鱗片（放大 40 倍）。 4. 兩個孢子囊着生於有夾毛的托上（放大 40 倍）。 5. 兩個分離的孢子囊，表示腹面的縱裂縫（放大 10 倍）。 6. 子囊羣下的夾毛（放大 100 倍）。 7. 孢子（放大 100 倍）。

PLATE 203

ARCHANGIOPTERIS BIPINNATA Ching

ANGIOPTERIDACEÆ

ARCHANGIOPTERIS BIPINNATA Ching, sp. nov.

Species distinctissima ab omnibus affinibus adhuc cognitis differt parte basali frondis bipinnata superiore simpliciter pinnata, pinnulis pinnarum inferiorum 3-8 jugis, parvis ad 3 cm longis ultra 7 mm medio latis, fere sessilibus, pinnis lateralibus terminalique conformibus lineari-lanceolatis ad 15 cm longis 2.5 cm latis longe acuminatis, marginibus pinnarum etiam pinnularum e basi usque ad apicem grosse dentatis, soris brevibus vix ultra 5 mm longis e sporangiis 20-40 vel in lamina pinnularum tantum 10-20 compositis.

Stipe 60-70 cm long, about 4 mm across, deeply grooved above, pale green, herbaceous, sparsely clothed in the lower part in dark brown lanceolate long-acuminate appressed scales and provided with one nodose swelling at about 20-34 cm above the base; lamina deltoid-ovate, 40-50 cm long, about 22 cm broad at the middle, bipinnate at base, simply impari-pinnate upwards; *pinnae* 10-12 pairs, of which the basal 3-4 pairs much the largest, about 5 cm apart, oblique, alternate, petiolate, the basal pair or two pairs 16-19 cm long, 6-7 cm broad, on petioles 2.5-3 cm long, pinnate with 2-7 pairs of small, broadly lanceolate, acuminate, patent, coarsely dentate and subsessile lateral *pinnules* which are 2-3 cm long, about 1 cm broad above the round-cuneate base, terminal pinnule large, 7-10 cm long, to 2.8 cm broad; the upper simple pinnae on petioles 4-6 mm long, linear-lanceolate, gradually long-acuminate, 17-12 cm long, 2-2.8 cm broad near the middle, base round-cuneate, margin from base up to apex regularly and prominently dentate; rachis compressed when dry, narrowly winged on each side towards the apex, terminal pinna similar to the lateral ones immediately below; *texture* herbaceous, green, when dry glabrous except for a few small brown scales on the rachis and costa beneath, also on the inflated petiole; *veins* distinct on both sides, about 2 mm apart, generally simple or forked from above the base, diverging almost at a right angle to the costa and running straight towards the margin into each tooth; *sori* linear, straight, those on the upper simple pinnae to about 5 mm long, extending from near the costa to about 4 mm within the leaf-margin, simple or forked along the forked veins, consisting of about 20-40 sporangia with dense brown branched paraphyses underneath and as long as the sporangia, those on the pinnules of the lower pinnae shorter, of about 10-12 sporangia, starting from the costule but fall short of the leaf-margin; *spores* pale, hyaline, round but angular with verrucose surface.

Southeastern Yunnan: Mar-kuan Hsien, Ching-kou (Lao Ching Shan), *K. M. Feng 13679,* November 7, 1947, in mixed forest, rare, alt. 1100-1300 m.

One of the most distinct species in the genus, resembling *Marratia* in general habit. The discovery of a bipinnate-leaved species in the genus *Archangiopteris* is very important in that it goes to change to a certain extent our previous generic concept as to the degree of pinnation, which is simply pinnate in all previously known species.

Plate 203. 1. Habit sketch (natural size). 2. Portion of simple pinna, showing venation and sori (× 4). 3. Scale from the lower part of stipe (× 40). 4. Two sporangia attached to the receptacle with paraphyses (× 40). 5. Two sporangia detached, showing longitudinal slit on the ventral side (× 10). 6. Paraphyses detached from the sori (× 100). 7. Spores (× 100).

第 203 圖　二回原始觀音座蓮

Plate 203. ARCHANGIOPTERIS BIPINNATA Ching

第二百零四圖

河口原始觀音座蓮(觀音座蓮科)

ARCHANGIOPTERIS HOKOUENSIS Ching

根狀莖粗大，肉質，亞直立，直徑 3—4 厘米，下面具鐵絲狀，厚肉質的黑色不分枝的粗根，葉簇生，柄長達 50 厘米，厚達 5 毫米，肉質，綠色，有 4—5 個膨大具溝槽而乾後爲黑色的節狀膨大，各節間的距離大致相等，另外被有一些卵狀披針形而基部爲圓心臟形的深棕色鱗片，邊緣有長鋸齒；葉體爲寬卵形，長達 30 厘米，寬約 38 厘米，一回奇數羽狀，頂端小羽片較大，長 22—20 厘米，寬 7—9 厘米，側生小羽片 2—3 對，同形，對生或亞對生，間距約 5—6 厘米，長 15—20 厘米，中部寬 5—7 厘米，闊橢圓披針形，有小柄，長約 1.5 厘米，膨大，淡黑色，略具鱗片，頂部爲短尾狀漸尖頭，並有粗鋸齒，向基部漸狹，成楔形，邊緣有波狀淺齒或波狀齒牙；葉爲紙質，上面深綠，下面淡綠，並有相當多的節狀細毛覆蓋；葉脈細長，頗開展，明顯，大都分叉，間爲單一，近葉邊向上彎弓，並伸入鋸齒；子囊羣線形，長 3—3.5 厘米，或較長，彼此頗接近，由 160—240 個子囊成二列組成，不育邊緣和中肋兩側寬達 5 毫米，夾毛線形，稠密，節狀分枝，由 10—15 個細胞組成，長過於子囊；孢子矩圓形，透明，具密集的刺狀突起。

產地：雲南東南部，河口，南溪鎮，朱維明號碼 1726，1955 年 7 月，生於潮濕濃蔭的林下溝中，海拔 150 米，普通。

本種爲一個獨特的種，其葉柄在基部以上具有 4—5 個節狀膨大，小葉很寬，橢圓披針形，邊緣有波狀鈍鋸齒，下面密生節狀毛；子囊羣極長，並具很長的密毛茸狀的夾毛，幾乎完全覆蓋着初生的子囊羣。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，表示葉脈，鋸齒，子囊羣和下面的節狀毛（放大 3 倍）。 3. 葉柄下部的鱗片（放大 40 倍）。 4. 兩個着生於托上的子囊和夾毛（放大 20 倍）。 5. 兩根夾毛（放大 60 倍）。 6. 孢子（放大 100 倍），另一個（放大 400 倍）。

PLATE 204

ARCHANGIOPTERIS HOKOUENSIS Ching

ANGIOPTERIDACEÆ

ARCHANGIOPTERIS HOKOUENSIS Ching, sp. nov.

Rhizomate crasso, suberecto, 3-4 cm diamtero, radicanti, radicibus incrassatis, teretibus, nigrescentibus, simplicibus e facie inferiore rhizomatis abundanter oriundis obtecto; *frondibus* fasciculatis, stipite ad 50 mm longo, 5 mm crasso, carnoso-herbaceo, virescenti, per totam longitudinem nodis 4-5 tumidis geniculatis in sicco nigris inter se plus minus fere aequaliter remotis instructo, paleis ovato-lanceolatis basi cordatis atro-brunneis copiose onusto praeditis, lamina ambito late ovata, ad 30 cm longa, 38 cm lata, impari-pinnata cum pinna terminali majore, 22-20 cm longa, 7-9 cm lata; *pinnis* lateralibus 2-3 jugatis, omnibus conformibus, oppositis vel. subalternis, ca. 5-6 cm inter se separatis, 15-20 cm longis, 5-7 cm medio latis, late elliptico-lanceolatis, petiolatis (petiolo ca. 1.5 cm longo, tumido, nigricante et paleaceo), apice breviter caudato-acuminatis et grosse serratis, basin versus gradatim cuneatis, marginibus grosse arcuato-serratis aut crenato-dentatis; *textura* chartacea, folia supra atro-viridi, subtus pallidiora, et pilis minutis articulatis modeste conspersa; *venis* lateralibus subrecto-patentibus, conspicuis, plerisque furcatis, rarius simplicibus, prope marginem antrorsim curvatis et fere in dentes protensis; soris linearibus, 3-3.5 cm longis, vel longioribus, subcontiguis, e 160-240 sporangiis 2-seriatim compositis, parte sterili secus marginem costamque ca. 5 mm lata, paraphysibus filiformibus ramosis, articulatis, 10-15-cellularibus, magis quam sporangiis longioribus, densissime obtectis; *sporis* rotundo-oblongis, minutissime denseque echinatis, hyalinis.

Southeastern Yunnan: Hokou, Nan-chi, *Chu Ve-ming 1726,* July 1955, in densely wooded humid ravine, alt. 150 m., common.

A remarkable species, differing from all other known species of the genus in having 4 or 5 nodose swellings above the base of the fleshy stipe, the unusually broad elliptico-lanceolate serrate pinnae densely glandular hairy on the under surface, the very long sori which extend from near the costa outwards to a short distance from the margin, and particularly in the very long dense branched shaggy paraphysate hairs almost completely covering the young developing sori.

Plate 204. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation, serrature and sori, also hairy under surface (× 3). 3. Scale from the lower part of stipe (× 40). 4. Two sporangia attached to the receptacle with paraphyses (× 20). 5. Two paraphyses removed from the sori (× 60). 6. Spores (× 100) with one enlarged (× 400).

第 204 圖　河口原始觀音座蓮

Plate 204. ARCHANGIOPTERIS HOKOUENSIS Ching

第 二 百 零 五 圖

台灣原始觀音座蓮(觀音座蓮科)

ARCHANGIOPTERIS SOMAI Hayata

葉柄長 50—60 厘米，有疏生鱗片，尤以下部爲多，基部以上約 25 厘米處有膨大的節，葉體長卵圓形，奇數羽狀，羽片 2—3 對，頂生羽片與下部的同形，長 20 厘米，寬 4 厘米，爲微倒披針形，中部以下漸狹，基部略爲寬楔形，頂端漸尖，尾狀，長 3—4 厘米，互生，有小葉柄（柄長約 1 厘米），葉緣淺波狀，基部以上有不規則的圓齒狀齒牙；葉爲厚草質或堅紙質，乾後棕色，幾無鱗毛；葉脈頗開展，單脈與分叉脈相間；子囊羣線形，長 1.5 厘米，位於中部，中肋兩邊及葉緣下邊爲不育空間，夾毛短於孢子囊，隱匿，從表面不易見到；孢子圓形或長圓形，頗微小，具疣狀突起，無色透明。

產地：台灣特產。

本種爲台灣南部，中部及北部高山森林中一種很普通的蕨類，並與雲南東南部的亨利原始觀音座蓮（*A. Henryi* Christ et Gies.）頗相似，但因羽片爲厚草質，長倒披針形，有圓齒狀齒牙和葉緣爲淺波狀，故有不同。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，表示葉脈，鋸齒及子囊羣（放大 4 倍）。 3. 葉柄下部的鱗片（放大 30 倍）。 4. 葉柄下部的橫切面（放大 4 倍）。 5. 葉柄中部的橫切面（放大 4 倍）。 6. 葉柄上部的橫切面（放大 4 倍）。 7. 兩個孢子囊着生於有夾毛的托上（放大 20 倍）。 8. 子囊羣下的夾毛（放大 100 倍）。 9. 孢子（放大 100 倍），另一個（放大 400 倍）。

PLATE 205

ARCHANGIOPTERIS SOMAI Hayata

ANGIOPTERIDACEÆ

ARCHANGIOPTERIS SOMAI Hayata, Ic. Pl. Form. **5:** 256. 1915; **6:** 154, fig. 60, t. 19. 1916; C. Chr. Ind. Fil. Suppl. I. 4. 1916; III. 26. 1933; Nakai in Bot. Mag. Tokio **41:** 78. 1927; M. Genkai, Short Fl. Form. 1. 1936.

Angiopteris Somai Hayata apud Makino et Nemota, Pl. Jap. 1563. 1925.

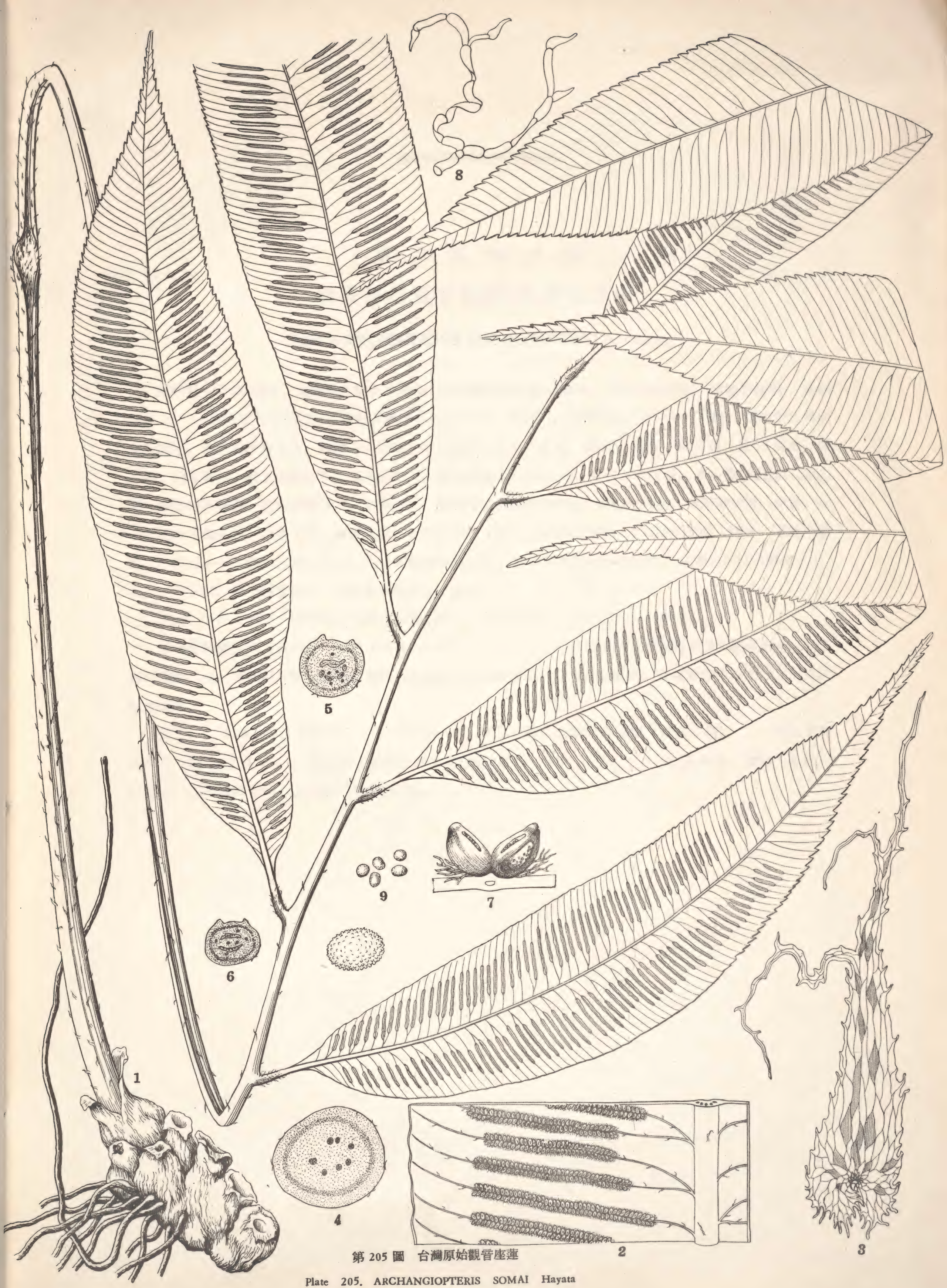
Protangiopteris Somai Hayata in Bot. Mag. Tokio **42**: 308. 1928.

Stipe 50-60 cm long, sparsely scaly especially in the lower part, with one nodose swelling at about 25 cm above the base; lamina oblong-ovate, impari-pinnate with 2-3 pinnae on each side under the similar terminal one; *pinnae* 20 cm long, 4 cm broad, slightly oblanceolate, very gradually narrowed from the middle downwards with a rather broadly cuneate base, apex caudate-acuminate with a linear acumen 3-4 cm long, alternate, petiolate (petiole about 1 cm long), margin repand, rather irregularly crenate-dentate above the base; *texture* thickly herbaceous or chartaceous, dry brown, nearly glabrous; *veins* very patent, alternately forked and simple; *sori* linear, to 1.5 cm long, medial, leaving a broad sterile space on each side of costa and along the margin, paraphyses shorter than sporangia and concealed when viewing from above; *spores* round or round-oblong, very minutely verrucose, hyaline.

Taiwan: Bahao, *T. Somai* (type), December 1910; Rengechi, Taichu, *S. Sasaki,* March 3, 1927; *Yamamota and Mori,* 2-3 November, 1932; Taihoku-syu, Bunzongun, Kanica, *Y. Yamamota,* July 24, 1938.

A fairly common fern in the mountain forests in the southern, middle and northern parts of Taiwan Island and is quite near *A. Henryi* Christ et Gies. from Southeast Yunnan and seems to differ in elongate oblanceolate pinnae of a thicker texture with crenate-dentate and often repand margin.

Plate 205. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation, serrature and sori (× 4). 3. Scale from the lower part of stipe (× 30). 4. Cross section from the lower part of stipe (× 4). 5. Cross section from the middle of the stipe (× 4). 6. Cross section from the upper part of the stipe (× 4). 7. Two sporangia attached to the receptacle with paraphyses (× 20). 8. Paraphyses removed from the sori (× 100). 9. Spores (× 100), one enlarged (× 400).



第 205 圖　台灣原始觀音座蓮

Plate 205. ARCHANGIOPTERIS SOMAI Hayata

第 二 百 零 六 圖

圓基原始觀音座蓮(觀音座蓮科)

ARCHANGIOPTERIS SUBROTUNDATA Ching

葉柄長 36—60 厘米，淡綠色，腹面有深溝，有淡紅棕色的線形鱗片，尤以下部爲多，邊緣有睫毛，基部以上 20—30 厘米處有膨大的節，葉體長與寬各約 40 厘米，寬卵形，奇數羽狀，羽片 4—6 對，頂生羽片與側生的同形，側生羽片爲互生，相距約 4 厘米，有小葉柄（柄長 7 毫米，膨大），基部一對甚短（長 14 厘米）鐮刀狀，向上彎弓，與上部的同形，基部圓形，上部羽片長 22—25 厘米，中部寬 5 厘米，平行闊披針形，漸尖頭，基部幾不變狹，圓形或亞圓形，不爲楔形，葉全緣或至多略呈波狀，頂端有鋸齒；葉爲薄草質，綠色，除中肋有鱗片疏生外，均爲光滑；葉脈開展，明顯，相距 4 毫米，單脈或分叉，近葉緣顯然向上彎弓；子囊羣線形，一般長 8—12 毫米，相距甚遠，位於邊緣與中肋之間，兩端有等寬的不育空間，有密生分枝的節狀夾毛，長過於孢子囊；孢子長圓腎形，有細密刺頭突起，透明。

產地：雲南東南部，西疇縣，馮國楣號碼 12019，生雜木林下，海拔 1500—1600 米。

本種形體頗似亨利原始觀音座蓮（*A. Henryi* Christ et Gies.），但羽片不爲披針形而爲平行闊披針形，其下部的爲鐮刀狀，基部羽片遠較上部的爲短，邊緣爲全緣或在頂端以下有時爲波狀，基部圓形或亞圓形，不爲明顯的變狹。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，表示葉脈，葉緣及子囊羣（放大 4 倍）。 3. 葉柄下部的鱗片（放大 30 倍）。 4. 兩個孢子囊着生在有夾毛的托上（放大 20 倍）。 5. 二條夾毛（放大 100 倍）。 6. 孢子（放大 100 倍），另一個（放大 400 倍）。

PLATE 206

ARCHANGIOPTERIS SUBROTUNDATA Ching

ANGIOPTERIDACEÆ

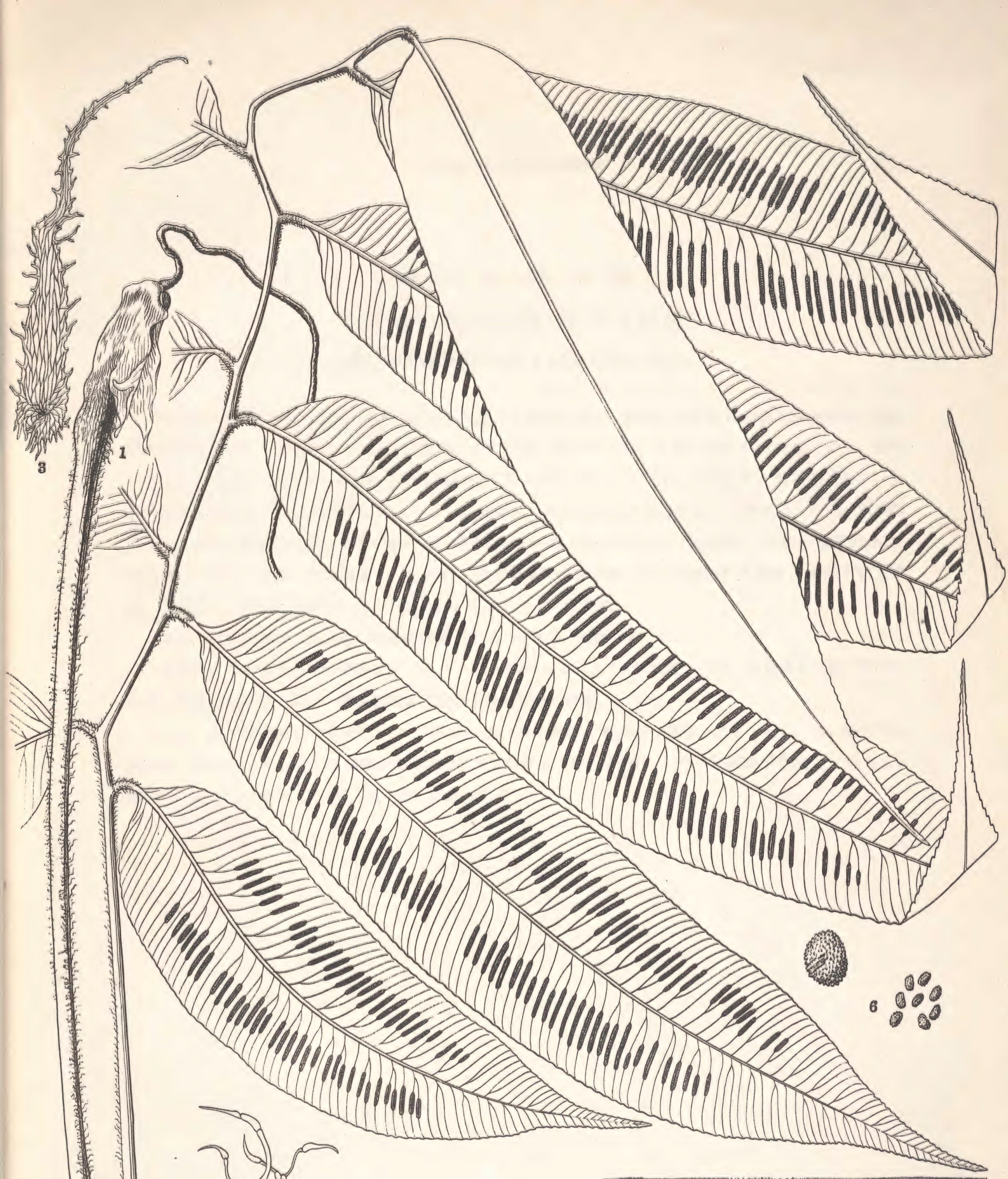
ARCHANGIOPTERIS SUBROTUNDATA Ching, sp. nov.

Species configuratione gregis *A. Henryi* Christ et Gies., differt pinnis nec lanceolatis sed late linearilanceolatis, inferioribus falcatis, infimis quam superioribus multo brevioribus, marginibus integris vel interdum undulatis, basin versus paulo dilatatis et rotundatis vel subrotundatis, vix conspicue angustatis.

Stipe 36-60 cm long, greenish, deeply grooved on the upper side, with one nodose swelling at 20-30 cm above the base, copiously clothed especially in the lower part in reddish-brown linear ciliate *scales;* lamina about 40 cm long and as broad, broadly ovate, impari-pinnate; *pinnae* 4-6-jugate below the similar terminal pinna, alternate, about 4 cm apart, petiolate (petiole ca. 7 mm long, inflated), the basal pair much shortened (to 14 cm long) and like those next above rather strongly falcate, base rounded, the upper ones 22-25 cm long, to 5 cm broad at the middle, broadly linear-lanceolate, gradually acuminate, hardly narrowed towards the rounded or subrounded, not cuneate base, margin entire, or at most slightly wavy below the dentate-serrate apical part; *texture* thin herbaceous, green, glabrous except the sparsely scaly costa beneath; *veins* patent, distinct beneath, 4 mm apart, forked or simple, decidedly curved upwards near the margin; *sori* linear, generally 8-12 mm long, far apart, situated midway between the costa and margin, leaving an equally broad sterile space on each side, densely paraphysate with freely branched articulate hairs longer than sporangia; *spores* oblong-reniform, finely echinate, hyaline.

Southeastern Yunnan: Si-chour Hsien, Faadoon, *K. M. Feng 12019,* Sept. 27, 1947, in mixed forest, alt. 1500-1600 m.

Plate 206. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation, leaf-margin and sori (× 4). 3. Scale from the lower part of stipe (× 30). 4. Two sporangia attached to the receptacle with paraphyses (× 20). 5. Two paraphyses removed from sori (× 100). 6. Spores (× 100), one enlarged (× 400).



第 206 圖　圓基原始觀音座蓮

Plate 206. ARCHANGIOPTERIS SUBROTUNDATA Ching

第二百零七圖

闊葉原始觀音座蓮(觀音座蓮科)

ARCHANGIOPTERIS LATIPINNA Ching

葉柄長 47—55 厘米，直徑 5 毫米，腹面有深溝，下部鱗片頗多，基部以上約 20 厘米處有膨大的節，葉體卵狀長圓形，長 35—45 厘米，寬 26—30 厘米，奇數羽狀；羽片 2—3 對，互生，相距 4—5 厘米，斜出，基部一對較上部的爲短，鐮刀狀，向上彎弓，上部羽片長 20 厘米，寬 5—5.5 厘米，中部最寬，闊卵狀披針形，向下漸狹爲楔形基部，頂端爲短漸尖或漸尖頭，並有鋸齒，葉全緣或多少爲微波狀；小葉柄長 1 厘米，略爲膨大，幾無鱗毛；葉爲厚紙質，上下兩面光滑，惟沿葉軸和中肋下面略有鱗片；葉脈疏生，開展，單脈或分叉，近葉緣向上彎弓，明顯；子囊羣長 1—1.5 厘米，位於葉緣與中肋之間，兩邊相距各約 7 毫米，列間有較寬間隙，夾毛密生，略短於孢子囊；孢子亞圓形，有密生的微小疣狀突起。

產地：雲南東南部，屏邊縣，蔡希陶號碼 60299，生林下，海拔 1200 米。

本種表面上頗似亨利原始觀音座蓮（*A. Henryi* Christ et Gies.），並曾被認爲同種，但葉爲厚紙質，羽片遠較寬，邊緣呈微波狀，基部一對顯然爲鐮刀狀和子囊羣的間距較寬。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，表示葉脈，鋸齒及子囊羣（放大 4 倍）。 3. 葉柄下部的鱗片（放大 30 倍）。 4. 兩個孢子囊着生於有夾毛的托上（放大 20 倍）。 5. 子囊羣下的夾毛（放大 100 倍）。 6. 孢子（放大 100 倍），另一個（放大 400 倍）。

PLATE 207

ARCHANGIOPTERIS LATIPINNA Ching

ANGIOPTERIDACEÆ

ARCHANGIOPTERIS LATIPINNA Ching, sp. nov.

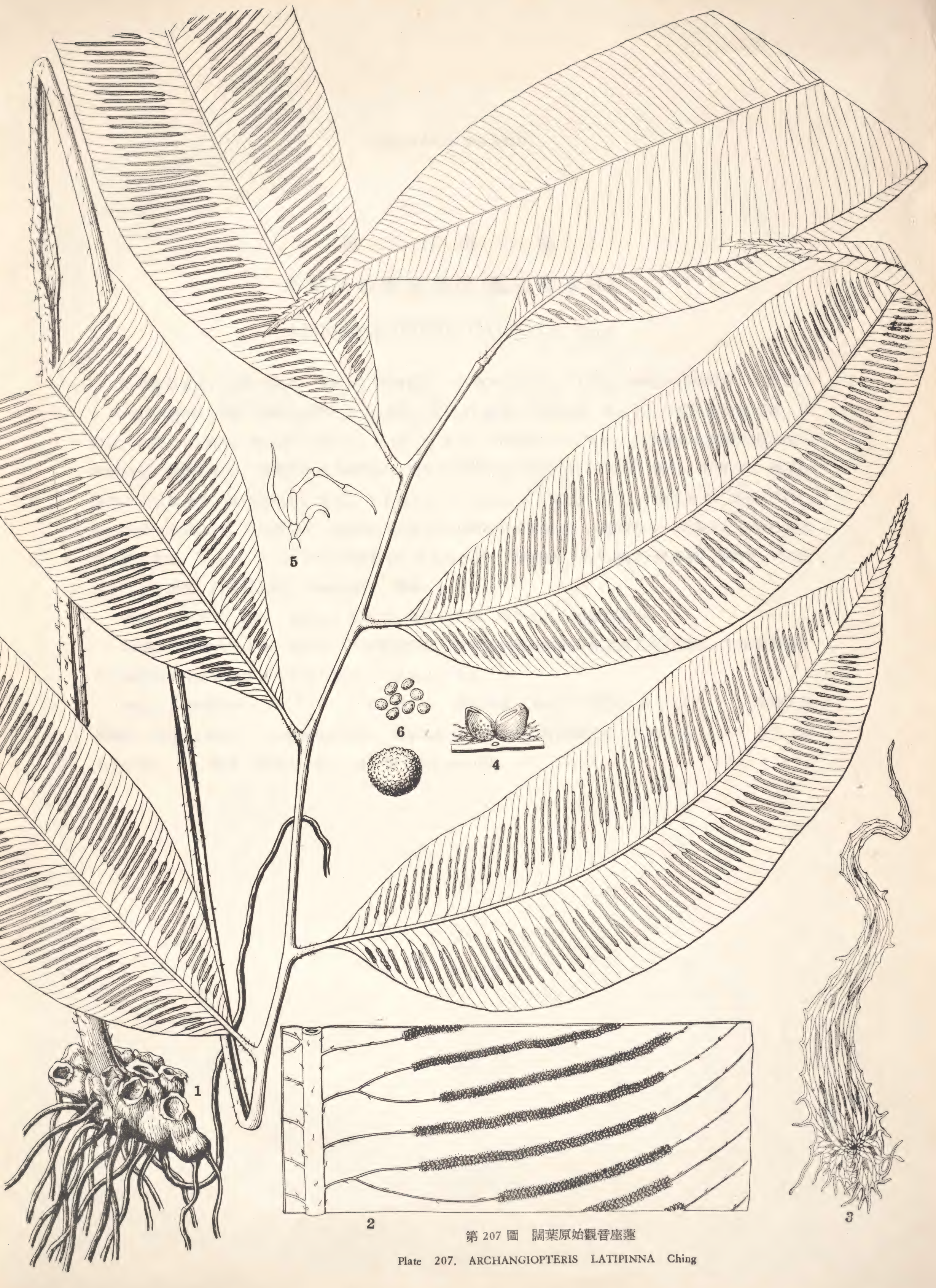
Species gregis *A. Henryi* Christ et Gies., a qua differt frondis textura duriore, pinnis late ovato-lanceolatis, inferioribus falcatim recurvatis, ad apicem potius breviter acuminatis et insuper soris longioribus.

Stipe 47-55 cm long, 5 mm across, deeply sulcate above, moderately scaly in the lower part, with one nodose swelling at about 20 cm above the base; lamina oblong-ovate, 35-45 cm long, 26-30 cm broad, impari-pinnate; *pinnae* 2-3-jugate, alternate, 4-5 cm apart, oblique, the basal pair only slightly shorter than those next above, the lower ones falcately curved, the upper ones to 20 cm long, 5-5.5 cm broad, the broadest part being near the middle, broadly ovate-lanceolate, gradually narrowed towards the cuneate base, apices rather short-acuminate, or acuminate and serrate, margin entire and more or less repandulate, petiole about 1 cm long, scarcely inflated and subglabrous; *texture* thickly chartaceous, both sides glabrous except a few small scales along the rachis and costa underneath; *veins* lax, patent, forked or simple, antrorsely curved towards the margin, distinct on both sides; *sori* 1-1.5 cm long, midway between the margin and costa, leaving a sterile space about 7 mm broad equally as wide along the margin as along the costa, and separated from each other by broader interstitial sterile spaces, paraphyses quite dense, somewhat longer than the sporangia; *spores* roundish rather than oblong, minutely and densely verrucose.

Southeastern Yunnan: Ping-pien Hsien, *H. T. Tsai 60299,* June 19, 1934 in woods, alt. 1200 m.

This new species resembles, in a superficial way, so closely *A. Henryi* Christ et Gies. that the type number on which it is based has actually been filed for sometime under that species. *A. latipinna* differs from the generic type described in 1899 in several constant and correlated characters, namely, thickly chartaceous texture of the fronds, repandulate margin of the much broader pinnae, of which the lower ones are decidedly falcate and the more widely separated sori due to the more lax venation with broader interstitial spaces.

Plate 207. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation, serrature and sori (× 4). 3. Scale from the lower part of stipe (× 30). 4. Two sporangia attached to the receptacle with paraphyses (× 20). 5. Paraphyses removed from the sori (× 100). 6. Spores (× 100), one enlarged (× 400).



第 207 圖　闊葉原始觀音座蓮

Plate 207. ARCHANGIOPTERIS LATIPINNA Ching

第二百零八圖

尾葉原始觀音座蓮(觀音座蓮科)

ARCHANGIOPTERIS CAUDATA Ching

根狀莖亞直立，粗達 2 厘米，有粗根，葉柄長 30—45 厘米，直徑 3—4 毫米，綠色，幾無鱗片，在基部以上 30 厘米處有膨大的節，葉體爲卵形，長 30 厘米，寬約 25 厘米，奇數羽狀；側生羽片在所見標本爲 2 對，亞對生，相距 5—6 厘米，頂生羽片稍較大，長 16—18 厘米，中部寬 4.5—5 厘米，側生羽片皆爲同形或基部一對微較短，闊倒披針形，向楔形的基部漸變狹，頂部突變爲尾狀（尾頭長約 1.5 厘米，線形，有鋸齒），葉邊自基部以上有粗齒牙；葉爲草紙質，綠色，上下兩面光滑，但沿中肋及葉脈有披針形小鱗片疏生；葉脈亞開展，與中肋成 60° 的上角，大多數分叉，或單脈，近葉緣向上彎弓而達於鋸齒；子囊羣長 8—10 毫米，離中肋及葉邊各約 6 毫米，亞近生，由 40—70 個子囊組成，罕有更多的，托稍隆起，夾毛遠較子囊爲短，紅棕色，有節，由基部分枝很多；孢子球圓形，具細密刺頭，透明。

產地：廣西南部，明江，乾牛山，前廣西大學生物系採，生半山以上的林內溝中。

本種是一明顯的地方種，其不同於亨利原始觀音座蓮者爲倒披針形的羽片突變成尾狀頂端，葉邊具粗齒牙和子囊羣的夾毛非常短而由基部分枝繁密，不易從上方見到。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，表示葉脈，鋸齒及子囊羣（放大 4 倍）。 3. 葉柄下部的鱗片（放大 20 倍）。 4. 子囊羣橫斷面，表示生於托上的二個子囊和短夾毛（放大 20 倍）。 5. 夾毛（放大 100 倍）， 6. 孢子（放大 100 倍），另一個（放大 400 倍）。

PLATE 208

ARCHANGIOPTERIS CAUDATA Ching

ANGIOPTERIDACEÆ

ARCHANGIOPTERIS CAUDATA Ching, sp. nov.

Rhizomate suberecto, ca. 2 cm crasso, radicoso; stipite 30-45 cm longo, 3-4 mm diametro, virescenti, subglabro, circ. 16 cm supra basin tumide nodoso et geniculato; lamina ambitu ovata, 30 cm longa, ca. 25 cm lata, impari-pinnata; *pinnis* uti videtur 2-jugis, suboppositis, 5-6 cm inter se remotis, pinna terminali paulo majore, 16-18 cm longa, 4.5-5 cm medio lata, lateralibus omnibus similibus, vel infimis vix brevioribus, late oblanceolatis, basin versus gradatim angustatis, basi cuneatis, apice subito caudatis (cauda 1.5 cm longa, lineari, serrata), margine e basi sursum grosse dentatis; *textura* herbaceo-chartacea, virescenti, utraque facie subglabra, secus costam et venulam squamis minutis lanceolatis sparsis conspersis; *venis* subrecte patentibus, sub angulo ca. 60° excurrentibus, plerisque furcatis, nonnullis simplicibus, intra marginem antrorsim curvatis et in dentes intrantibus; *soris* 8-10 mm longis, ca. 6 mm a margine et costa remotis, subcontiguis; sporangiis 40-70 pro soro vel rarius pluribus, receptaculo paulo elevato, pilis quam sporangiis multo brevioribus, rufis, articulatis, e basi dense ramosis praeditis; *sporis* globulo-tetraedribus, minutissime denseque echinatis.

Southern Kwangsi: Min River, Kang Nu Shan, specimens ex Herb. Kwangsi University, in ravine under forest, about halfway up the mountain, Oct. 2, 1935.

A very distinct local species, differing from *A. Henryi* Christ et Gies. in oblanceolate pinnae with abruptly caudate apices, coarsely dentate leaf-margin and in the very short and profusely branched paraphyses so completely hidden under the sori that their presence can hardly be detected from above, or without the sporangia being carefully removed off the veins.

Plate 208. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation, serrature and sori (× 4). 3. Scale from the lower part of stipe (× 30). 4. Two sporangia attached to the receptacle with very short paraphyses (× 20). 5. Paraphyses removed from the sori (× 100). 6. Spores (× 100), one enlarged (× 400).

3

1

5

6

4

2

第 208 圖. 尾葉原始觀音座蓮

Plate 208. ARCHANGIOPTERIS CAUDATA Ching

第 二 百 零 九 圖

尖葉原始觀音座蓮(觀音座蓮科)

ARCHANGIOPTERIS TONKINENSIS (Hayata) Ching

葉柄長 40—45 厘米，淡綠色，腹面有寬溝，有疏生棕色披針形而有齒牙的鱗片，下部較多，基部以上 20—30 厘米處有膨大的節，葉體闊卵圓形，遠短於葉柄，奇數羽狀，頂生羽片有長柄，與側生的同形，側生羽片 2—4 對，對生，斜出或斜開展，卵狀披針形，長 20—25 厘米，寬 4—5 厘米，有小葉柄（柄長約 5 毫米，膨大，乾後近黑色），中部最寬，向兩端漸狹，頂端爲長漸尖頭，基部短楔形，葉緣有弧曲形尖鋸齒；葉多少爲厚堅紙質，腹面光滑無鱗毛，背面沿中肋有鱗片疏生；葉脈甚開展，很明顯，分叉或單脈，頂部向上彎弓，直達鋸齒；子囊羣長 7—10 厘米，線形，位於葉緣與中肋之間，其細密而分枝的節狀夾毛短於孢子囊，易脫落；孢子長圓形，有微小密刺頭突起，透明。

分佈：海南島及越南。

本種頗似亨利原始觀音座蓮（*A. Henryi* Christ et Gies.），但葉柄遠較葉體爲長（約兩倍），羽片卵狀披針形，對生，邊緣具有規則的弧曲鋸齒，夾毛遠短於孢子囊，故易區別。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，表示葉脈，鋸齒及子囊羣（放大 4 倍）。 3. 葉柄基部的鱗片（放大 30 倍）。 4. 兩個孢子囊着生於有夾毛的托上（放大 20 倍）。 5. 子囊羣下的夾毛（放大 100 倍）。 6. 孢子（放大 100 倍），另一個（放大 400 倍）。

PLATE 209

ARCHANGIOPTERIS TONKINENSIS (Hayata) Ching

ANGIOPTERIDACEÆ

ARCHANGIOPTERIS TONKINENSIS (Hayata) Ching, comb. nov.

Protomarratia tonkinensis Hayata in Bot. Gaz. **67**: 88, fig. 1. 1919.

Archangiopteris tamdaoensis Hayata in Bot. Gaz. **67**: 90, fig 2. 1919; C. Chr. Ind. Fil. Suppl. III. 26. 1933; C. Chr. et. Tard. in Lecomte, Not. Syst. **5**: 5. 1935; Tard. et C. Chr. in Fl. Ind. **7**: 17. 1939.

Protangiopteris tamdaoensis Hayata in Bot. Mag. Tokio **42**: 309. 1928.

Stipe 40-45 cm long, pale green, broadly grooved in its whole length above, sparsely clothed in brown lanceolate dentate *scales* especially in the lower part, with a nodose swelling at 20-30 cm above the base, lamina broadly ovate in outline, much shorter than stipe, impari-pinnate with one large and long-petiolate terminal pinna similar to those immediately below; *pinnae* 2-4 pairs, opposite, oblique or obliquely patent, ovate-lanceolate, 20-25 cm long, 4-5 cm broad, petiolate (petiole about 5 mm long, inflated and blackish), broadest at the middle, gradually narrowed towards both ends, apex long-acuminate, base shortly cuneate, margin serrate with rather sharp and arcuate teeth; *texture* more or less thickly chartaceous, glabrous above, very sparsely scaly along the rachis and on the under side; *veins* very patent, quite distinct below, forked or simple, curved upward, one into each tooth; *sori* 7-10 mm long, linear, midway between the costa and margin, finely paraphysate with branched articulate hairs much shorter than sporangia, finally becoming abraded; *spores* roundish-oblong, minutely and densely echinose, hyaline.

Kwangtung: Hainan, Five Finger Mt., Shan Ah Ping, *C. L. Tso 44184,* Oct. 24, 1932, in woods, alt. 3000 ft.; southern slope of the same locality, *F. A. McClure 9470,* May 19, 1922, in wooded ravines; *C. Wang 35723,* Dec. 20, 1933, by stream side.

Tonkin: Tam Dao, *B. Hayata* (type of *A. tamdaoensis* Hayata), août, 1917; *Pételot 3956,* Mai. 1913; environs de Chapa on the border of Yunnan, *Pételot,* août, 1913, vers alt. 1300 m.

Annam: Cua Tung, *Cadière,* Mai, 1934.

The present species closely resembles *A. Henryi* Christ et Gies., differing in the much longer stipe (about twice as long as the lamina), ovate-lanceolate opposite pinnae with regularly and rather arcuately serrate margin and in having paraphyses much shorter than the sporangia.

Plate 209. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation, serrature and sori (× 4). 3. Scale from the basal part of stipe (× 30). 4. Two sporangia attached to the receptacle with paraphyses (× 20). 5. Paraphyses removed from the sori (× 100). 6. Spores (× 100), one enlarged (× 400).

第 209 圖. 尖葉原始觀音座蓮

Plate 209. ARCHANGIOPTERIS TONKINENSIS (Hayata) Ching

第 二 百 一 十 圖

鞭 葉 鐵 線 蕨 (鐵 線 蕨 科)

ADIANTUM CAUDATUM Linné

根狀莖短而直立，有密的根叢，葉簇生，直立，斜或伏地；葉柄長 5—12 厘米，似鐵線形，開展，暗栗色，下部有鱗片和粗長毛密生，鱗片深棕色，披針形，全緣；粗長毛棕色有節，葉體線狀披針形，長 15—25 厘米，基部不變狹，或幾不變狹，頂端漸尖，或通常中軸延長成鞭狀匍匐莖，向下着地生根，一回羽狀；羽片多數，篦齒狀，開展，基部的相距較遠，長 1.2—1.5 厘米，寬 7 毫米，幾無小柄，對開式，下邊切成水平直線，上邊爲圓形，並爲或深或淺的分裂，經常多次深銳裂成爲許多有鈍圓頂的接近裂片；葉爲粗糙硬紙質，中軸和葉的上下面有粗長毛，葉脈下面明顯，多次二叉分枝；子囊羣略爲圓形或爲橫生於各裂片頂端的圓腎形，假囊羣蓋上也有短粗毛。

分佈：福建，貴州，雲南，四川，浙江，湖北，江西，湖南的南部，台灣；香港，印度，緬甸，越南，泰國，錫蘭，馬來亞和菲列濱羣島也有分佈，但不產於日本；尤常見於華南和雲南南部，喜鈣質土壤。

圖註：1. 本種全形（自然大）。　2. 羽片，表示葉脈及子囊羣（放大 4 倍）。　3. 葉柄下部的鱗片（放大 30 倍）。　4. 葉柄上的毛（放大 50 倍）。　5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 210

ADIANTUM CAUDATUM Linné

ADIANTACEÆ

ADIANTUM CAUDATUM Linné Mant. 308. 1771; Sw. Syn. Fil. 122. 1806; Willd. Sp. Pl. **5:** 431. 1810; Hook. Exot. Pl. 2: t. 104. 1828; Sp. Fil. **2:** 13. 1851; in Blakiston on the Yangtze 362. 1862; in Journ. Bot. **1857:** 336; Hook. & Bak. Syn. Fil. 115. 1867 (pro parte); Benth. Fl. Hongk. 447. 1861; Bedd. Ferns South. Ind. t. 2. 1863; Handb. Ferns Brit. Ind. 83. 1883; Milde, Fil. Europ. Atl. 29. 1867; Henry, List Pl. Form. 110. 1896; Christ in Bull. Herb. Boiss. **6:** 958. 1898; Diels in Engl. u. Prantl. Nat. Pflanzenfam. **1:** iv. 283. 1899; Christ in Bull. Soc. Bot. France **52:** Mém. I. 61. 1905; C. Chr. Ind. Fil. 24. 1905; in Acta Hort. Gotheb. **1:** 92. 1924; in Contr. U. S. Nat. Herb. **26:** 310. 1931; in Danske Bot. Ark. **7:** 125. 1932; Dunn & Tutcher, Fl. Kwangt. and Hongk. 338. 1912; Matsum. et Hayata, Enum. Pl. Form. 415. 1906; v. A. v. R. Handb. Mal. Ferns 324. 1908; Hand-Mzt. Symb. Sin. **6:** 38. 1929; Ogata, Ic. Fil. Jap. 2: t. 51. 1929; Tagawa in Journ. Jap. Bot. **14:** 309. 1938 (pro parte); Tard. et C. Chr. in Fl. Gen. Ind. **7:** 180. 1940 (pro parte); Dickson in Ohio Journ. Sci. **46:** 135. 1946; Ching in Acta Phytotax. Sinica **6:** 313. 1957.

Adiantum lyratum Blanco, Fl. Phil. 832. 1837.

Adiantum Balansae Christ in Bull. Soc. Bot. France **52**: Mém. I. 61. 1905 (non Baker).

Rhizome short, erect, densely radicose; *fronds* tufted, erect or spreading, stipe 5-12 cm long, wiry, spreading, dark castaneous-brown, densely scaly and strigose in the lower part, *scales* dark brown, lanceolate, entire, *hairs* long, brown, septate, lamina linear-lanceolate, 15-25 cm long, base not narrowed, or hardly so, apex acuminate but more often prolonged into a whip-like stolon and rooting at the apex, simply pinnate; *pinnae* numerous, pectinate, patent, the lower ones rather widely separated, 1.2-1.5 cm long and 7 mm broad, nearly sessile, dimidiate, the lower line cut straight and horizontal, the upper roundish, more or less cut, often deeply and repeatedly incised with numerous contiguous segments having blunt apex; *texture* rigidly chartaceous, the rachis and both surfaces of the frond villose; *veins* prominent below, repeatedly dichotomous; *sori* roundish or transversely oblong at the tip of segments, one to each segment, indusium also shortly strigose.

A pan-tropical and subtropical fern. In China numerous specimens have been seen from Kwangtung, Hainan, Taiwan, Kwangsi, Fukien, Kweichow, Southern part of Yunnan, Szechuan, Hupeh, Chekiang, Kiangsi and Hunan, being most abundant in South China and Southern Yunnan, prefering calcareous soil.

Also Hongkong, India, Burma, Indo-China, Thailand, Ceylon, Malaya and the Philippines, but not yet known from Japan.

Plate 210. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 4). 3. Scale from the lower part of stipe (× 30). 4. Hairs from the stipe (× 50). 5–6. Sporangium with spores (× 100).

第 210 圖　鞭葉鐵線蕨

Plate 210. ADIANTUM CAUDATUM Linne

第 二 百 十 一 圖

蒼 山 鐵 線 蕨 (鐵 線 蕨 科)

ADIANTUM SINICUM Ching

根狀莖短而直立，有密的根叢，鱗片鑽狀線形，微亮黑色，有狹棕色的邊緣，覆瓦狀密生；葉簇生，硬而直立，葉柄長 5—12 厘米，粗 1.5 毫米，栗黑色，光亮，同葉軸一樣，全部密生有節狀淡紅色剛毛狀的張開長毛，基部混生有與根狀莖上同樣的鱗片，葉體長 12—27 厘米，寬 1.7—2.5 厘米，線狀披針形，向頂端漸狹，稍呈鈍頭，基部幾不變狹，一回羽狀；羽片 24—32 對，開展，近生或亞篦齒狀，無柄，基部一對幾不變小，多少下向，中部羽片長 1—1.5 厘米，基部寬 5—6 毫米，對開式，下邊切成直線，基部上方截形，頂端略爲圓形，外邊微彎弓，並淺裂爲 4—5 個寬裂片；頂生羽片爲扇形，淺三裂，較大於下面側生羽片；葉爲粗草質，乾後淡綠色，上下兩面有長而硬的剛毛狀的淺色毛；葉脈細而明顯，二叉分枝，每小裂片約有 8 條小脈，子囊羣在每羽片有 3—4 個，或每小裂片有 1 個，罕爲 2 個，圓形或橫生長圓形，頂端爲不育，假囊羣蓋黑棕色，堅硬，生有與葉面上同樣的長硬毛。

產地：雲南西北部，鄧川縣，蒼山，海拔 1500 米，生石上。

本種爲雲南大理蒼山西北部特有種，一般形體酷似愛氏鐵線蕨 (*Adiantum Edgeworthi* Hook.)，但在毛茸上又極似鞭葉鐵線蕨 (*Adiantum caudatum* L.)，惟葉體頂端有一扇形羽片，側生羽片僅淺裂成三四個小裂片，葉柄基部的栗黑色光亮的鱗片有淺棕色的邊緣及較長而粗硬開展的淡紅色剛毛，故易與鞭葉鐵線蕨區別。

圖註：1. 本種全形 (自然大)。 2. 羽片，有子囊羣 (放大 4 倍)。 3. 不育羽片 (放大 4 倍)。 4. 葉柄基部的鱗片 (放大 30 倍)。 5. 葉柄上的剛毛 (放大 100 倍)。 6. 羽片上的剛毛 (放大 100 倍)。 7—8. 孢子囊及孢子 (放大 100 倍)。

PLATE 211

ADIANTUM SINICUM Ching

ADIANTACEÆ

ADIANTUM SINICUM Ching in Bull. Fan Mem. Inst. Biol. New Series **1:** 267. 1949; in Acta Phytotax. Sinica **6:** 315. 1957.

Rhizome short, erect, densely radicose, *scales* linear-subulate, shining blackish with narrow brown margin, densely imbricate; *fronds* caespitose, erect, rigid, stipe 5-12 cm long, 1.5 mm across, dark castaneous, shining, densely clothed in reddish articulate setaceous spreading long hairs throughout the rachis, mixed in the basal part with similar scales as those on rhizome, lamina 12-27 cm long, 1.7-2.5 cm broad, linear-lanceolate, gradually attenuate towards the bluntish apex, base scarcely narrowed, simply pinnate; *pinnae* 24-32 pairs, patent, close or subpectinate, sessile, the lowest ones scarcely reduced, more or less deflexed, the middle pinnae 1-1.5 cm long, 5-6 mm broad at base, dimidiate, cut straight below, anterior base truncate, apex roundish, outer edge slightly curved, shallowly lobato-incised into 4-5 broad lobules, the terminal pinna flabellate, shallowly trilobed, larger than those immediately below; *texture* thickly herbaceous, dry greenish, both sides rather copiously hirsute with setaceous stout hairs of paler color; *veins* fine but distinct on both sides, flabellately forked with about 8 veinlets to each lobule; sori 3-4 to each pinna, or 1 (rarely 2) to each lobule, orbicular or transversely oblong, leaving apical part of pinnae sterile, indusium dark-brown, firm, similarly hirsute as the leaf surfaces.

Northwestern Yunnan: Whang-chia-ping, Tang-chuan Hsien, north of Tali, *R. C. Ching 24897,* September 12, 1940, on the edge of rocks, alt. 1500 m.

A remarkable species, sharing the general habit with *Adiantum Edgeworthi* Hook., but in the type of hairs it closely resembles *A. caudatum* L. from which it can be easily distinguished by the fronds terminated by a flabellate pinna, the much less divided pinnae, the blackish shining scales with light-colored margin and by the longer, coarser and spreading reddish setose hairs along the stipe and rachis.

Plate 211. 1. Habit sketch (natural size). 2. Pinna, soriferous (×4). 3. Pinna, sterile (×4). 4. Scale from the base of stipe (×30). 5. Hairs from the stipe (×100). 6. Hairs from the under side of pinna (×100). 7–8. Sporangium with spores (×100).

第 211 圖　蒼山鐵線蕨

Plate 211. ADIANTUM SINICUM Ching

第 二 百 十 二 圖

仙 霞 鐵 線 蕨 (鐵 線 蕨 科)

ADIANTUM JUXTAPOSITUM Ching

根狀莖短而直立，有密的根叢，和疏生的黑棕色披針形厚質鱗片；葉簇生，直立，多數，長 15—18 厘米，(包括長 5—7 厘米，栗色，光亮圓形的葉柄)，葉體長 10—12 厘米，寬約 3 厘米，一回奇數羽狀；羽片 7—9 對，對生，或向上爲亞對生，斜出開展，節間相距 2—3 厘米，有小葉柄 (柄長 3 毫米)，長 1 厘米，寬 1.2—1.5 厘米，爲闊亞圓三角形，全緣或外邊緣略爲微波狀，上部羽片較小，基部都以關節着生；葉爲亞革質，上面綠色，下面灰綠色；葉脈兩邊頗明顯，數次二叉分枝；每羽片有 4—6 個假囊羣蓋，亞圓形或橫生腎形，革質，黑色，宿存。

產地：福建北部與浙江南部交界處的仙霞嶺，少見。

本種爲一明顯的蕨種，頗近似廣東省的錢氏鐵線蕨 (*Adiantum Chienii* Ching)，但羽葉爲寬扇形，寬過於長，每羽片上有 4—6 個子囊羣和亞圓形或橫生腎形的假囊羣蓋，故易區別；在一般形體上本種更近於團葉鐵線蕨 (*Adiantum capillus-junonis* Rupr.)，惟葉直立，有較粗健的葉柄，葉爲亞革質，有短假囊羣蓋，(圓形或橫生腎形)，中軸不延長成爲鞭狀匍匐莖，故大不相同。

圖註：1. 本種全形 (自然大)。　2. 羽片，表示葉脈及子囊羣 (放大 3 倍)。　3. 根狀莖上的鱗片 (放大 40 倍)。　4—5. 孢子囊及孢子 (放大 100 倍)。

PLATE 212

ADIANTUM JUXTAPOSITUM Ching

ADIANTACEÆ

ADIANTUM JUXTAPOSITUM Ching in Acta Phytotax. Sinica **6:** 312. 1957.

Rhizome short, erect, densely radicose, sparsely clothed in dark-brown lanceolate firm *scales; fronds* caespitose, upright, numerous together, 15-18 cm long including stipe, which is 5-7 cm long, stout, castaneous, shining and glabrous, lamina 10-12 cm long, about 3 cm broad, simply impari-pinnate; *pinnae* 7-9 pairs, opposite or subopposite upward, oblique-patent, 2-3 cm apart, petiolate (petiole 3 mm long), 1 cm long, 1.2-1.5 cm broad, smaller towards apex, orbicular-triangular with round, entire or slightly wavy outer edge, the terminal pinna smaller, all articulate at the base; *texture* subcoriaceous, green above, bluish below; *veins* flabellately forked, rather distinct on both sides; *indusia* 4-6 to each pinna, suborbicular or transversely reniform, blackish, coriaceous, persistent.

Northern Fukien: Sih-Ya-Ling, on the border of Chekiang, growing in dry rock crevices, rare.

A distinct endemic species, proximately related to *Adiantum Chienii* Ching (see Ching, Ic. Fil. Sin. **4:** t. 159) from Kwangtung Province, but differing in the broader fan-shaped pinnae, which are broader than long and in having more sori to each pinnae with suborbicular or transversely reniform indusia. In general habit, this species resembles *Adiantum capillus-junonis* Rupr. more than any others, yet differing in upright fronds of much stouter build with much thicker stipe and subcoriaceous leaf texture, shorter (orbicular or transversely reniform) indusia and in not prolongated and rooting apex of fronds.

Plate 212. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 3). 3. Scale from the rhizome (× 40). 4–5. Sporangium with spores (× 100).

第 212 圖　仙霞鐵線蕨

Plate 212. ADIANTUM JUXTAPOSITUM Ching

第 二 百 一 十 三 圖

團 葉 鐵 線 蕨 (鐵 線 蕨 科)

ADIANTUM CAPILLUS-JUNONIS Ruprecht

根狀莖短而直立，有密的根叢，頂覆深棕色披針形的鱗片；葉多數簇生，向四面展開，並且大都爲匍匐狀；葉柄長 2—6 厘米，細鐵絲形，光亮，淺黑色，平滑，葉體長 8—15 厘米，寬 2—3 厘米，闊披針形，一回奇數羽狀，或者中軸通常延長變成鞭狀匍匐莖，頂端向下，着地生根，發生幼株；羽片 3—7 對，對生或通常互生，遠分開，有小柄（柄長約 3 毫米），長寬各約 1—1.5 厘米或寬過於長，亞圓形或爲闊扇形，基部圓形或短楔形，上邊爲闊圓形，全緣或通常多少缺刻成寬淺裂片，具微小而均勻的齒牙，上部的羽片漸變小，扇形，在鞭狀匍匐莖上也有少數同樣而疏生的羽片；葉爲薄草質，光滑，上面嫩綠色，下面淡灰綠色；葉脈爲細絲狀，多次二叉，有許多明顯小脈，分別達於小鋸齒；子囊羣通常 2—5 個，生於羽片上邊緣，略爲圓形或橫長圓形或短線形，被缺刻分開，假囊羣蓋爲深棕色，質堅實。

分佈：本種主要爲中國特有種，最初在北京西山發現，現知廣佈於河北，山東，河南，甘肅，四川，貴州，雲南，廣西，廣東和台灣。日本及朝鮮也有。喜生於濕潤的石灰岩脚陰凹處或古牆脚下，爲一美麗的蕨種。

圖註：1. 本種全形（自然大）。　2. 能育羽片（放大 3 倍）。　3. 不育羽片（放大 3 倍）。　4. 葉柄基部的鱗片（放大 40 倍）。　5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 213

ADIANTUM CAPILLUS-JUNONIS Ruprecht

ADIANTACEÆ

ADIANTUM CAPILLUS-JUNONIS Ruprecht, Distr. Crypt. Vasc. Ross. 49. 1845; Milde in Bot. Zeit. **1867:** 148; Fil. Europ. Alt. 29. 1867; Hook & Bak. Syn. Fil. 114. 1874; Franch. Plant. David. **1:** 348. 1884; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1:** iv. 283. 1899; in Bot. Jahrb. **29:** 200. 1900; Christ in Warb. Monsunia 67. 1900; in Bull. Soc. Bot. France **52:** Mém. I. 61. 1905; C. Chr. Ind. Fil. 24. 1905; in Acta Hort. Gotheb. **1:** 93. 1924; Matsum. et Hayata, Enum. Pl. Form. 612. 1906; Dunn & Tutcher, Fl. Kwangt. and Hongk. 338. 1912; Hand-Mzt. Symb. Sin. **6:** 38. 1929; Tagawa in Acta Phytotax. et Geobot. **1:** 101. 311. 1932; in Journ. Jap. **14:** 312. 1938; Kitagawa in Rep. 1st. Sci. Exped. Manch. **4:** 87. 1935; Kitagawa, Lineamenta Fl. Mansh. 26. 1939; Ching in Acta Phytotax. Sinica **6:** 317. 1957.

Adiantum cantoniense Hance in Ann. Sci. Nat. Ser. 4. **15**: 129. 1861; Hook. & Bak. Syn. Fil. 114. 1867.

Rhizome short, erect, densely radicose below, crowned with dark brown lanceolate *scales; fronds* fasciculate, numerous together, spreading and mostly creeping, stipe 2-6 cm long, wiry, polished, blackish, glabrous, lamina 8-15 cm long, 2-3 cm broad, broadly lanceolate, simply pinnate with a terminal pinna, or more often prolongated into a whip-like stolon and rooting at the apex; *pinnae* 3-7 pairs, distant, opposite or generally alternate, petiolate (petiole 3 mm long), 1-1.5 cm long, and as broad or broader, suborbicular, or flabellate, base cuneate or subrounded, the outer edge broadly rounded, entire or slightly and broadly lobed, minutely denticulate, the upper pinnae smaller, fan-shaped, the stolons bear a few distant similar pinnae below; *texture* pellucido-herbaceous, glabrous, light tender green above, bluish-green below; *veins* fine, repeatedly forked with distinct veinlets, one to each denticule; *sori* usually 2-5 round the outer edge, roundish, transversely oblong, or linear, separated by a notch, indusium dark brown, firm.

A very pretty and shade-loving fern in dense patches on shaded moist limestone or calcareous soil. One of the common ferns in China, ranging from the Provinces of Hopei, Shantung, Honan, Kansu, Szechuan, Hupeh, Kweichow down to Yunnan, Kwangsi, Kwangtung and Taiwan.

Also Japan and Korea. Type from the mountains around Peking.

Plate 213. 1. Habit sketch (natural size). 2. Pinna, fertile (× 3). 3. Pinna, sterile (× 3). 4. Scale from the base of stipe (× 40). 5–6. Sporangium with spores (× 100).

第 213 圖　團葉鐵線蕨

Plate 213. ADIANTUM CAPILLUS-JUNONIS Ruprecht

第二百一十四圖

半月形鐵線蕨（鐵線蕨科）

ADIANTUM PHILIPPENSE Linné

根狀莖短而直立，有密的根叢，頂部有深棕色狹披針形的鱗片疏生；葉簇生，向四面開展或向下着地；葉柄長 10—15 厘米，光亮，深栗棕色，基部以上光滑，葉體長 12—30 厘米或更長，寬 4—8 厘米，披針形到長圓披針形，一回奇數羽狀或者中軸往往延長變成無葉的鞭狀匍匐莖，頂端向下着地生根，發生幼株；羽片 7—12 對，開展，接近，長 1.5—4 厘米，寬 1—2 厘米，略爲半圓形或新月形，對開式，下邊緣幾切成直線或與小葉柄成傾斜角，上邊緣圓形與鈍形頂端有幾個或深或淺的缺刻，但無鋸齒；小葉柄長達 1—1.5 厘米，細鐵絲形，幾與中軸成直角，以關節着生於小羽葉下邊緣的中央偏內或自內向外三分之一處；頂生羽片（如有）爲扇形，大小幾等於側生羽片；鞭狀中軸下部通常有少數退縮的小羽片疏生；葉爲紙草質，中軸及上下面均光滑無毛；葉脈下面明顯，數次二叉分枝；子囊羣成長線形沿上邊緣着生，僅被少數的缺刻割斷。

分佈：本種廣泛分佈於熱帶及亞熱帶的亞洲，澳洲及非洲；在中國產海南，台灣，廣東，廣西，雲南及貴州南部，四川西南部（峨嵋山麓）。香港也有。喜生於濕潤酸性紅壤，常成塊狀羣生。

本種爲一突出的經典種，由於它的半圓形或新月形的羽片，易與其他之種識別，但要指出，本種植株的高矮和羽片的大小形態變異極大，鑑定時應加以注意。

圖註：1. 本種全形（自然大）。 2. 能育羽片（放大 2 倍）。 3. 不育羽片（放大 2 倍）。 4. 葉柄基部的鱗片（放大 40 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 214

ADIANTUM PHILIPPENSE Linné

ADIANTACEÆ

ADIANTUM PHILIPPENSE Linné Sp. Pl. **2:** 1094. 1753; Sw. Syn. Fil. 120 1806; Hook. Sp. Fil. **2:** 3. 1861; Copel. Polyp. Phil. 93. 1905; C. Chr. in Contr. U. S. Nat. Herb. **26:** 310. 1931; Ind. Fil. Suppl. III. 19. 1933; Tagawa in Journ. Jap. Bot. **14:** 310. 1938; Tard. et C. Chr. in Fl. Gen. Ind. **7:** 182. 1940; Ching in Acta Phytotax. Sinica **6:** 318. 1957.

Adiantum lunulatum Burm. Fl. Ind. 235. 1768; Sw. Syn. Fil. 120. 1806; Hook. and Grev. Ic. Fil. t. 104. 1831; Benth. Fl. Hongk. 446. 1861; Hook. & Bak. Syn. Fil. 114. 1867; Milde, Fil. Europ. Alt. 28. 1867; Bedd. Ferns South. Ind. t. 1. 1863: Handb. Ferns Brit. Ind. 82. 1883; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1**: iv. 283. 1899. C. Chr. Ind. Fil. 29. 1905; v. A. v. R. Handb. Mal. Ferns 325. 1908; Dunn & Tutcher, Fl. Kwangt. and Hongk. 338. 1912; Hand–Mzt. Symb. Sin. **6**: 38. 1929; Ogata, Ic. Fil. Jap. **5**: t. 204. 1933.

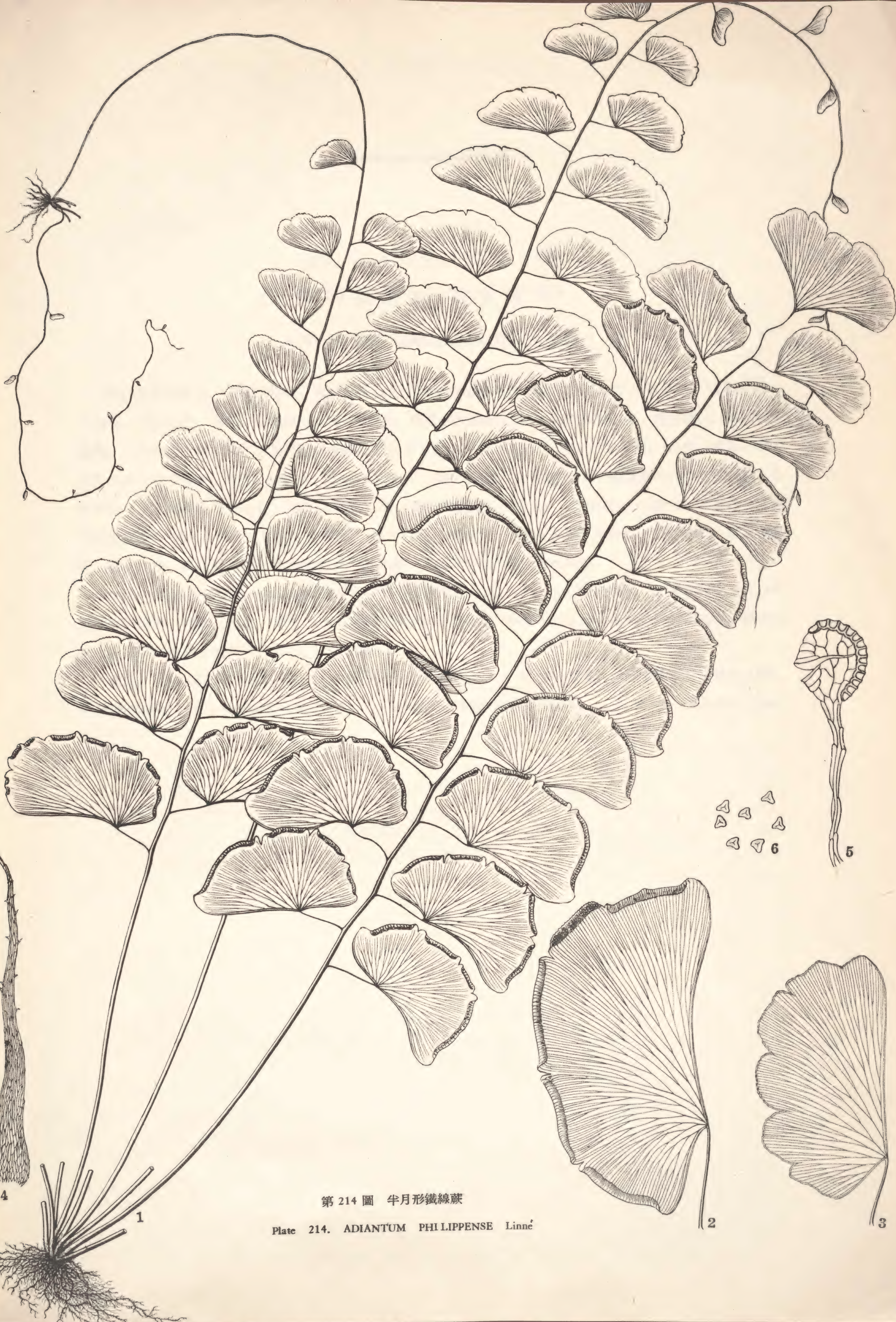
Pteris lunulata Retz. Obs. **2**: 28, t. 4. 1761.

Rhizome short, erect, sparsely crowned at the apex with dark brown narrowly lanceolate *scales; fronds* fasciculate, spreading, or nodding, stipe 10-15 cm long, polished, dark chestnut-brown, glabrous above the base, lamina 12-30 cm or longer, 4-8 cm broad, lanceolate to oblong-lanceolate, impari-pinnate, or often elongated and rooting at the tip of a wiry stolon; *pinnae* 7-12 pairs, spread, close, 1.5-4 cm long, 1-2 cm broad, semi-orbicular, or lunate, subdimidiate, the lower edge cut nearly in a straight line or slightly oblique with the petiole, the upper edge rounded and, like the bluntly-rouned outer edge, usually with a few remote incisions, or more or less lobed, not serrate, petioles of the lower pinnae 1-1.5 cm long, wiry, almost form a right angle with the rachis, attached by an articulation to the pinnae at about one-third way from the inner edge; the terminal pinna (if present) flabellate, cuneate, as large as, or larger than the lower ones; the whip-like stolon usually bears a few distant small pinnae below; *texture* papyraceo-herbaceous, the rachis and surfaces glabrous; *veins* distinct below; *sori* in a continuous line along the upper edge, only interrupted by a few narrow notches.

Widely distributed in tropical and subtropical regions of Asia, Australia and Africa. In China, this fern has been known from Yunnan, Szechuan (Mt. Omei), Kweichow, Kwangsi, Kwangtung, Hainan, Taiwan and Hongkong, prefering a shaded position and forming large patches in acid soil.

A very distinct species, not easily to be confounded with other related species by dint of its peculiarly shaped pinnae, which, however, vary a great deal in size and depth of incision along the upper margin.

Plate 214. 1. Habit sketch (natural size). 2. Fertile pinna (× 2). 3. Sterile pinna (× 2). 4. Scale from the base of stipe (× 40). 5–6. Sporangium with spores (× 100).



第 214 圖　半月形鐵線蕨

Plate 214. ADIANTUM PHILIPPENSE Linné

第二百一十五圖

翅柄鐵線蕨（鐵線蕨科）

ADIANTUM SOBOLIFERUM Wallich

根狀莖短而直立，有密的根叢，頂部被深棕色狹披針形的硬鱗片；葉簇生，直立，罕下垂；葉柄長 12—16 厘米，暗栗棕色，粗強，兩側有淡棕色的狹翅，鱗片疏生或幾光滑，葉體長等於柄，闊披針形，向基部不變狹，一回奇數羽狀，或中軸有時延長變成鞭狀的匍匐基，向下着地生根；羽片 7—9 對，分開，開展，或者下部的多少向下傾斜，長 2—3 厘米，寬 1—1.3 厘米，亞長方長圓形，對開式，下邊幾割成直線，圓頭的上基部爲切形，上邊幾與下邊平行，但多少缺刻爲 3—5 個圓形無鋸齒的裂片；小葉柄長 2—3 毫米，兩側也有淡棕色波形狹翅；頂生小羽片（如有）爲扇形，大小不一；鞭狀延長的中軸下部常具幾個疏生小羽片；葉爲厚紙質，兩面光滑，乾後呈淡棕綠色；葉脈下面頗明顯；子囊羣爲橫生長圓形或腎形。

分佈：本種也是廣泛分佈於東亞熱帶及亞熱帶和非洲的蕨種。在中國分佈於海南，台灣和雲南及廣西南部，但甚稀見。越南，印度，緬甸，爪哇及菲列濱羣島等地也有。原種模式標本最初發現於印度北部。從引證的文獻可見本種過去有過許多異名，十分混亂。

圖註：1. 本種全形（自然大）。 2. 能育羽片（放大 2 倍）。 3. 不育羽片，表示全緣裂片（放大 2 倍）。 4. 葉柄橫斷面，表示兩側的翅（放大）。 5. 葉柄基部的鱗片（放大 50 倍）。 6—7. 孢子囊及孢子（放大 100 倍）。

PLATE 215

ADIANTUM SOBOLIFERUM Wallich

ADIANTACEÆ

ADIANTUM SOBOLIFERUM Wallich, List n. 74. 1828 (nom. nud.); Hook. Sp. Fil. **2:** 13, t. 74 A. 1851; Bedd. Ferns Brit. Ind. t. 16. 1867; C. Chr. Ind. Fil. 33. 1905; Suppl. III. 197. 1933; Tagawa in Journ. Jap. Bot. **14:** 309. 1938; Tard. et C. Chr. in Fl. Gen. Ind. **7:** 181. 1940; Ching in Acta Phytotax. Sinica **6:** 320. 1957.

Adiantum caudatum Hook. & Bak. Syn. Fil. 115. 1874 (pro parte).

Adiantum caudatum var. *soboliferum* (Wall.) Bedd. Handb. Ferns Brit. Ind. 84. 1883.

Adiantum Mettenii Kuhn, Fil. Afr. 65. 1865 (nom. nud.); Hook. & Bak. Syn. Fil. ed. 2. 472. 1874; v. A. v. R. Handb. Mal. Ferns 326. 1908; C. Chr. Ind. Fil. 30. 1905; in Dansk Bot. Ark. **7:** 124, t. 48, fig. 4. 1932; Ogata, Ic. Fil. Jap. **2:** t. 53. 1929.

Adiantum lunulatum Burm. var. *Mettenii* (Kuhn) Bedd, Ferns Brit. Ind. Suppl. 6, t. 354. 1876; Handb. Ferns Brit. Ind. 83. 1883.

Adiantum Balancae Bak. in Journ. Bot. **28:** 263. 1890; Christ in Bull. Herb. Boiss. **6:** 597. 1898.

Adiantum alatum Copel. in Perkins Fragm. 192. 1905; Polyp. Phil. 93. 1905; A. Peter in Fedde, Rep. Sp. Nov. **40:** 43. 1929.

Adiantum lunulatum Ogata, Ic. Fil. Jap. **2:** t. 53. 1929. (non Burm. 1768).

Rhizome short, erect, densely radicose, clothed at the growing apex with some small, dark brown, firm, linear-lanceolate *scales; fronds* fasciculate, erect, or rarely nodding, stipe 12-16 cm long, dark chestnut-brown, stout, narrowly winged on each side, sparsely scaly or subglabrous, lamina as long as stipe, broadly lanceolate, not narrowed towards the base, simply impari-pinnate, or sometimes the rachis prolongated into a whip-like stolon and rooting at the tip; *pinnae* 7-9 pairs, distant, spreading, or the lower ones somewhat deflexed, 2-3 cm long, 1-1.3 cm broad, subrectangular-oblong, subdimidiate, cut quite straight below, upper side of the base oblique-truncate, roundish, the upper edge also quite in a line but more or less deeply lobed especially towards the blunt apex; *lobes* 3-5, round, entire, petiole 2-3 mm long, stout and, like the entire rachis, is provided on each side with a brown, narrow often wavy wing, the terminal pinna (if present) flabellate, cuneate, the stolon (when present) often with a few smaller distant pinnae below; *texture* rather thickly chartaceous, both sides glabrous, dry brownish green; *veins* quite distinct below; *sori* transversely oblong or reniform, placed in sinuses, one to each lobe, about 3-5 to each pinna.

Another widely distributed fern in Tropical and Subtropical Asia and Africa. In China, specimens have been seen from Southern Yunnan, Kwangsi, Hainan and Taiwan. Also Indo-China, India, Burma, Java and the Philippines. Type from N. India.

The present species, though quite similar to *A. philippense* L. in general habit, can be easily distinguished by the presence on each side of stipe, rachis and petiole of a narrow brown wing, which is more or less wavy on the petiole, much thicker leaf texture and shorter sori.

Plate 215. 1. Habit sketch (natural size). 2. Fertile pinna (× 2). 3. Sterile pinna, showing entire margin of lobes (× 2). 4. Cross section of stipe with a wing on each side. 5. Scale from the base of stipe (× 50). 6–7. Sporangium with spores (× 100).

第 215 圖　翅柄鐵線蕨

Plate 215. ADIANTUM SOBOLIFERUM Wallich

第 二 百 一 十 六 圖

鐵 線 蕨（鐵 線 蕨 科）

ADIANTUM CAPILLUS-VENERIS Linné

根狀莖匍匐，頗細長，有紅棕色的狹披針形的鱗片密生； 葉近生或較遠生， 直立； 葉柄細長，長 10—16 厘米，光亮，淡黑色， 基部以上光滑， 葉體爲三角狀卵形， 大小不一， 通常長 13—25 厘米，寬 6—15 厘米，2—3 回羽狀，頂部一回羽狀，有時爲 1—2 回羽葉；羽片 8—13 對，互生，有柄， 斜出向上，接近，基部一對最大，二回羽狀，或在小型植株爲一回羽狀，有小柄； 末回小羽片寬 1—2 厘米， 大都爲扇形或爲亞長方形的對開式，基部楔形，有小柄，上邊緣常爲不規則的深裂；裂片鈍頭，不育裂片有小齒牙，頂生小羽片多少爲扇形，基部爲長楔形；葉爲薄草質，嫩淡綠色，兩面光滑；葉脈明顯，對稱二叉分裂爲細絲狀的小脈，在不育小葉達於鋸齒；子囊羣亞圓形或橫生長圓形，生於寬淺的凹陷邊緣，每裂一個，而爲缺刻所分開。

分佈：本種爲世界種，而形體的變異性，分裂度及小羽片的銳裂深度，往往變異極大。在中國由北向南有大量標本採自河北，陝西，山西，河南，甘肅的南部和長江以南各省直達廣東，由東向西，自東海邊的江浙起經長江流域直達四川，雲南，更向西至緬甸，喜馬拉雅。海南，台灣及日本，鮮朝都有分佈。喜鈣質土或石灰岩，爲美麗的蕨種，並爲世界著名的室內盆栽觀賞植物之一。

圖註：1. 本種全形（自然大）。 2. 能育小羽片， 表示假囊羣蓋（放大 3 倍）。 3. 不育小羽片，表示邊緣小齒牙（放大 3 倍）。 4. 根狀莖上的鱗片（放大 30 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。 7. 團葉變型（自然大）。 8. 細裂葉變型（自然大）。

PLATE 216

ADIANTUM CAPILLUS-VENERIS Linné

ADIANTACEÆ

ADIANTUM CAPILLUS-VENERIS Linné Sp. Pl. **2:** 1096. 1753; Sw. Syn. Fil. 124. 1806; Hook Gen. Fil. t. 60 B. 1836; Sp. Fil. **2:** 36. 1851; Hook & Bak. Syn. Fil. 123. 1867; Milde, Fil. Europ Alt, 30. 1867; Bedd. Ferns South Ind. t. 4. 1863; Handb. Ferns Brit. Ind. 84. 1883; Christ, Farnkr. d. Erde 138. 1897; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1:** iv. 284. 1899; C. Chr. Ind. Fil. 24. 1905; Ogata, Ic. Fil. Jap. **1:** t. 1. 1928; Ching in Sinensia 3: 340. 1933; Tagawa in Journ. Jap. Bot. **14:** 313. 1936; Tard. et C. Chr. in Fl. Gen. Ind. **7:** 185. 1940; DeVol, Ferns East. China 115. 1945; Ching in Acta Phytotax. Sinica **6:** 341. 1957.

Adiantum submarginatum Christ in Bull. Herb. Boiss. II. **3**: 511. 1903 (pro parte).

Adiantum Michelii Christ in Bull. Acad. Géogr. Bot. Mans. **1910**: 10.

Rhizome creeping, rather slender, densely clothed in rufo-brown linear-lanceolate *scales; fronds* proximate, or quite distant, stipe slender, 10-16 cm long, polished, blackish, naked above the base, lamina deltoid-ovate, quite variable in size, generally 13-25 cm long, 6-15 cm broad, 2-3 pinnate under the simply pinnate apical part, sometimes quite simply pinnate; *pinnae* 8-13 pairs, alternate, petiolate, oblique, close, the basal pair much the largest, fully bipinnate, or pinnate in small plants, petiolulate; the *ultimate pinnules* 1-2 cm broad, mostly fan-shaped, or subrectangular and dimidiate, cuneate, petiolulate, the outer margin often irregularly and deeply lobed from the circumference in the direction of the centre, the *lobes* obtuse and dentate in the sterile part, the terminal pinnule more or less fan-shaped and long-cuneate; *texture* thin herbaceous, light green, glabrous; *veins* distinct, with fine dichotomous veinlets, one to each tooth in the sterile pinnule; *sori* roundish or transversely oblong, placed in roundish sinuses, one to each lobe.

A cosmopolitan species, very variable in size, degree of pinnation and depth of segmentation of pinnules. In China numerous specimens have been seen from Hopei, Shensi, Honan, Kansu and all the provinces south of the Yangtze southwards down to Kwangtung, and from the sea coast westwards to Szechuan and Yunnan. Also Taiwan, Japan, Korea and the Himalayas.

A most graceful shade-loving calciphilous (lime-loving) plant, often forming large patches in dripping limestone nitches or crevices. Extensively grown as favourite pot plant for house decoration and conservatories.

Plate 216. 1. Habit sketch (natural size). 2. Fertile pinna, showing the shape of indusia (× 3). 3. Sterile pinna, showing serrature (× 3). 4. Scale from the rhizome (× 30). 5–6. Sporangium with spores (× 100). 7. Forma *dissecta* (Mart. et Galeot.) Ching (natural size). 8. Forma *fissa* (Christ) Ching (natural size).

第 216 圖　鐵線蕨

Plate 216. ADIANTUM CAPILLUS-VENERIS Linné

第 二 百 一 十 七 圖

月 芽 鐵 線 蕨 (鐵 線 蕨 屬)

ADIANTUM EDENTULUM Christ

根狀莖短匍匐或斜行，較粗健，有紅棕色或深棕色闊披針形漸尖的鱗片覆蓋；葉亞簇生，多數成叢；葉柄長 12—20 厘米，粗過於 1 毫米，暗栗色，光亮，乾後多少呈壓扁形，基部以上光滑，葉體長 12—18 厘米，寬 5—12 厘米，三角卵形或爲狹長圓形，頂端爲鈍頭，2—3 回羽狀；羽片 4—6 對，生於一回羽狀的由 2—4 對小羽片組成的頂部之下，互生、向上斜出，接近，有小葉柄，(基部小葉柄長達 1.5 厘米)，基部一對較大，長 5—10 厘米，1—2 回羽狀，長圓形（如爲一回羽狀）或爲三角形（如爲二回羽狀)；小羽片 3—6 對，不分裂，有小柄，長 5 毫米；末回小羽片幾乎都爲同形，闊 1—1.2 厘米，高 8—10 毫米，扇形，瓦覆於小軸，基部楔形，下部的有略斜的基部，有短小柄，上邊緣圓形，經常兩裂，不具鋸齒；葉爲草質或堅草質，乾後爲綠色，上下面同色，而且光滑，不育的裂片爲全緣或至多爲波狀；葉脈下面頗明顯；子囊羣一般每小羽片有二個，爲長圓形或線形，橫生於上邊的寬深凹處。

分佈：本種爲我國西南部高山針葉林下的特有種，產雲南西北部，四川西南部（峨嵋山）及貴州中部，海拔自 3000—3400 米的石灰岩地區。

本種爲一明顯的地區性種，在形體上極似普通的鐵線蕨（*Adiantum capillus-veneris* L.)，但形體較小，末回羽片一般具二個長形的子囊羣橫生於闊深的缺口內，而且特別是不育小羽片爲全緣，不具鋸齒，至多爲波狀，故易於識別。

圖註：1. 本種全形（自然大)。　2. 能育小羽片，表示子囊羣在發育初期不甚下陷於缺口中（放大 4 倍)。3. 同上，表示子囊羣成熟後深陷於缺口情況（放大 3 倍)。　4. 不育小羽片，表示全緣或略成波狀邊緣（放大 3 倍)。　5. 根狀莖上的鱗片（放大 30 倍)。　6—7. 孢子囊及孢子（放大 100 倍)。

PLATE 217

ADIANTUM EDENTULUM Christ

ADIANTACEÆ

ADIANTUM EDENTULUM Christ in Bull. Soc. Bot. France **52:** Mém. I. 63. 1905; C. Chr. Ind. Fil. 661. 1905; in Contr. U. S. Nat. Herb. **26:** 310. 1931; Ching in Acta Phytotax. Sinica **6:** 338. 1957.

Adiantum Delavayi Christ, l. c.; C. Chr. l. c.

Adiantum capillus-veneris L. var. *sinuatum* Christ in Bull. Soc. Bot. France **52**: Mém. I. 61. 1905; in Bull. Acad. Géogr. Bot. Mans. **1906**: 62; C. Chr. in Acta Hort. Gotheb. **1**: 93. 1924.

Rhizome short-creeping or oblique, rather thick, clothed in rufo-brown or fusco-brown broadly lanceolate acuminate *scales; fronds* subcaespitose, several together, stipe 12-20 cm long, a little over 1 mm thick, dark castaneous, glossy, dry somewhat compressed, glabrous above the base, lamina 12-18 cm long, 5-12 cm broad, deltoid-ovate to narrowly oblong, apex obtuse, 2-3-pinnate; *pinnae* 4-6 pairs (below the simply pinnate apical part consisting of 2-4 pairs of simple pinnae), alternate, very oblique, contiguous, petiolate (petioles on the basal pinnae to 1.5 cm long), the basal pinnae larger, 5-10 cm long, oblong (when simply pinnate), or deltoid (when bipinnate), varying from 1-2-pinnate; *pinnules* 3-6 pairs, simple, on petiolules 3 mm long, or the lower 1-2 pairs again pinnate, on petiolules 5 mm long; the *ultimate pinnules* nearly all similar, 1-1.2 cm broad, 8-10 mm high, fan-shaped, cuneate, imbricate on the costules, the lower ones with slightly oblique base, shortly petiolulate, the upper margin rounded, entire or more or less 2-lobed; *texture* herbaceous or firmly so, dry green, concolorous and glabrous on both sides, the lobes of sterile pinnule rounded, entire or slightly undulate; *veins* quite distinct below; *sori* usually 2 to each pinnule, transversely oblong to linear, placed in deep sinuses especially at maturity.

Numerous specimens have been seen from Northwest Yunnan, Southern Szechuan (Mt. Omei), Sikang and Kweichow (Van-chin Shan). Type from Ta-pin-tze, West Yunnan, *Delavay 1523.* A common fern in the region, growing on moss-clad rocks under forests at elevations of 2500 to 3400 m.

A very distinct local species, but was much confused by Christ by giving different names to different growing stages of the same species. It is obviously a close relative to *A. capillus-veneris* L., differing in smaller ultimate bifid pinnules generally with 2 elongate sori transversely placed in deep sinuses and, above all, in the entire or at most wavy margin of the sterile pinnules.

Plate 217. 1. Habit sketch (natural size). 2. Fertile pinna, showing the less deeply sunk indusia in younger state (× 4). 3. The same, showing more deeply sunk indusia in mature state (× 3). 4. Sterile pinna, showing entire or slightly wavy margin of the lobes (× 3). 5. Scale from the rhizome (× 30). 6–7. Sporangium with spores (× 100).

第 217 圖　月芽鐵線蕨

Plate 217. ADIANTUM EDENTULUM Christ

第二百一十八圖

馮氏鐵線蕨（鐵線蕨科）

ADIANTUM FENGIANUM Ching

根狀莖細長而匍匐，斜出，有黑褐色鑽狀線形小鱗片；葉近生，多數，葉柄爲細弱毛髮狀，亮栗色，基部以上光滑，長 4—6 厘米，葉體幾與葉柄等長，寬 1—2 厘米，鈍頭，狹長圓形，二回奇數羽狀；羽片 5—6 對，長 12—20 毫米，寬 7—10 毫米，有小葉柄，斜出，亞覆瓦狀，羽片在一回羽狀頂端下面略爲羽狀，或僅由 2—3 片小羽片組成；末回小羽片都同樣，長 3—5 毫米，寬 2—4 毫米，扇狀，基部楔形，上邊截形或亞圓形，有 7—10 個略爲鈍頭的長三角形齒牙狀的深鋸齒；葉爲薄草質，乾後綠色，上下兩面光滑；葉脈明顯，二叉分枝，每一齒牙有一條小脈；每一小羽片有一個橫生長圓形筆直的子囊羣，長幾乎等於小羽片外邊緣，兩端僅留 1—2 齒牙爲不育部分，假囊羣蓋全緣，但有微波狀邊緣，質薄，灰白色，宿存。

產地：雲南西北部，麗江東北部的持古雪山，海拔 3400 米，生林下濕潤岩石上。

本種爲細葉鐵線蕨（*Adiantum venustum* Don.）羣的最小巧的也是最特出的一種，不易和其他相近的種混淆。特別引人注意的是孢子囊有 40 個以上的加厚細胞所組成的環帶和很短的柄。

圖註：1. 本種全形（自然大）。 2. 兩片末回小羽片，表示子囊羣及假囊羣蓋（放大 10 倍）。 3. 不育小羽片，表示葉脈及有鋸齒的邊緣（放大 10 倍）。 4—5. 根狀莖上的鱗片（放大 30 倍）。 6—7. 孢子囊及孢子（放大 100 倍）。

PLATE 218

ADIANTUM FENGIANUM Ching

ADIANTACEÆ

ADIANTUM FENGIANUM Ching in Bull. Fan Mem. Inst. Biol. New Series **1:** 267. 1949; in Acta Phytotax Sinica **6:** 328. 1957.

Adiantum fimbriatum Christ in Bull. Soc. Bot. France **52**: Mém. I. 62. 1905; C. Chr. Ind. Fil. 661 1905 (pro parte).

Rhizome slender, creeping, oblique, clothed in dark brown, linear-subulate small *scales; fronds* proximate, numerous, stipe capillary, weak, light castaneous, glabrous above the base, 4-6 cm long, lamina nearly as long as the stipe, 1-2 cm broad, narrowly oblong, obtuse, bipinnate; *pinnae* 5-6 pairs, 15-20 mm long, 7-10 mm broad, petiolate, very oblique, subimbricate, pauci-pinnate or 2-3-foliolate under the simply pinnate and short apical part; *ultimate pinnules* all similar, 3-5 mm long, 2-4 mm broad, fan-shaped, cuneate, truncate or subrounded along the upper margin and deeply dentate with 7-10 elongate, deltoid teeth having rather bluntish apex; *texture* pellucido-herbaceous, dry green, glabrous on both sides; *veins* distinct, fine, dichotomously forked with one veinlet to each tooth; *sori* one to each pinnule, transversely oblong, straight, nearly as long as the width of the outer margin except for the 1-2-toothed sterile edge on each side, indusium thin, whitish, entire, with straight, slightly wavy margin, persistent.

Northwestern Yunnan: Chi-chung-loo, Chu-koo Snow Mountain, N.E. of Likiang city, upon wet rocks under forest, *K. M. Feng 9206,* August 29, 1942, alt. 3400 m.; Bois de Santcha Ho, *Delavay 1,* June 17, 1887 (*A. fimbriatum* Christ, pro parte).

This distinct endemic species is one of the smallest and most elegant of the group of *A. venustum* Don, not easily to be confounded with any other species by dint of its delicate and very small stature. Attention may be called to the striking feature of the sporangium which has a very broad annulus consisting of over 40 incrassate cells and the short stalk, while other species under observation generally has long-stalked sporangia with narrower annulus of about 20 thickened cells.

Plate 218. 1. Habit sketch (natural size). 2. Two ultimate pinnules, showing sori and indusia (× 10). 3. Sterile pinna, showing venation and dentate margin (× 10). 4–5. Scales from the rhizome (× 30). 6–7. Sporangium with spores (× 100).

第 218 圖　馮氏鐵線蕨

Plate 218. ADIANTUM FENGIANUM Ching

第 二 百 一 十 九 圖

長 蓋 鐵 線 蕨 (鐵 線 蕨 科)

ADIANTUM SMITHIANUM (C. Chr.)Ching

根狀莖細長，橫生，有紅棕色卵狀披針形的鱗片，漸尖頭，全緣；葉散生，二列，葉柄直立，圓柱狀，初爲栗紅色，漸變爲栗黑色，有光澤，全體光滑無毛，長 15—20 厘米，粗約 1.5 毫米，葉體爲闊卵狀三角形，基部亞圓形，頂端急尖或鈍頭，長與寬各 16—22 厘米，三回羽狀；羽片 5—7 對，互生，間距 2—3 厘米，卵狀橢圓形，有小葉柄，斜出，基部一對較大，長 8—11 厘米，寬 4—5 厘米，上部的較小；一回小羽片有小葉柄，頂部爲奇數羽狀，下有 3—4 對一回小羽片，上先出排列，長 3—4 厘米，寬約 1.5 厘米，基部上方一片直立，多少蓋在中軸上面，有 3—4 個小羽片；末回小羽片爲寬倒卵形或扇形，基部楔形，上邊爲半圓形，並有深而密的鋸齒，長 1—1.3 厘米，寬 7—9 毫米，或過之，基部相等，有小葉柄；鋸齒爲長三角形，有短芒，直立，多而密，在不育葉約有 30—35 個；葉爲薄草質，乾後爲綠色；末回小羽片上有假囊羣蓋 1—3 個或更多，不是腎形，而是半圓形，或常爲長圓形，上邊筆直，下邊半圓形，膜質，生於較深的缺刻內。

分佈：四川北部，雲南西北部（麗江），西康西南部，甘肅南部，生亞高山針葉林下，海拔 2500—3000 米。

本種爲康藏高原的普通蕨種，過去曾誤認爲喜馬拉雅的細葉鐵線蕨（*Adiantum venustum* Don.），其實後者在中國少見。本種向北分佈直達陝西秦嶺太白山及山西大五台山，但形體較模式遠小而簡單，可名爲陝西變種（var. **shensiense** Ching）。

圖註：1. 本種全形（自然大）。　2. 末回小羽片，有長圓形的假囊羣蓋（放大 3 倍）。　3. 末回小羽片，有半圓形假囊羣蓋（放大 3 倍）。　4. 末回小羽片，表示葉脈及鋸齒（放大 3 倍）。　5. 根狀莖上的鱗片（放大 30 倍）。　6—7. 孢子囊及孢子（放大 100 倍）。

PLATE 219

ADIANTUM SMITHIANUM (C. Chr.) Ching

ADIANTACEÆ

ADIANTUM SMITHIANUM (C. Chr.) Ching in Acta Phytotax. Sinica **6**: 335. 1957.

Rhizome slender, wide-creeping, clothed in ovate-lanceolate acuminate, rufo-brown entire *scales; fronds* far apart, distichous, stipe strong, erect, terete, atro-castaneous, glossy and glabrous above the base, 15-20 cm long, about 1.5 mm across, lamina broadly deltoid-ovate, base broader, cuneate-rounded, apex rather obtuse, 16-22 cm long and as broad, tripinnate; *pinnae* 5-7-jugate under a short, simply pinnate apex, alternate, contiguous, petiolate, ovate-oblong, 2-3 cm apart, oblique, the basal pair much the largest, 8-11 cm long, 4-5 cm broad, becoming smaller upwards; *pinnules of the 1st. order* petiolulate, 3-4-jugate under the simply impari-pinnate apex, anadromously disposed, 3-4 cm long, about 1.5 cm broad, the anterior basal one erect and imbricating on the rachis, pinnate; *pinnules of ultimate order* broadly cuneate-obovate or flabellate, semi-circular round the upper margin, 1-1.3 cm long, 7-9 mm broad or even broader, base equal, petiolulate, the outer margin deeply and densely serrate; *teeth* elongate-deltoid, aristate, erect, about 30-35 to each sterile pinnule; *texture* thin herbaceous, dry green; indusia 1-2-3 (or rarely more) to each ultimate pinnule, not reniform but semi-orbicular or quite often oblong, and straight above, semi-orbicular below, membranaceous, placed in rather deep sinuses.

Szechuan: Northern part, near Kuan-yin-miao, *Harry Smith 3671,* alt. 3900 m. in stony and shrubby meadows; northwestern part, Drogochi, *Harry Smith 4546, 4712* (type), alt. 2500 m. in open mixed forest by the road leading to Tsaga. Kansu: Ta-ka-chang, *Dr. D. Hummels 1336.* Yunnan: Likiang Snow Range, northwestern flank, *S. K. Chiao 30217; K. M. Feng,* alt. 2900 m.; on the border of Sikang, *T. T. Yü 9490;* Atuntze, *T. T. Yü 5711, 9490, 7936; C. W. Wang 69868,* alt. 2700 m. under forest; Weisih Hsien, *C. W. Wang 63993,* alt. 3500 m.; Doker-la, Mekong-Salwin Divide, *G. Forrest 19974* (pro parte). Sikang: Tsa-wa-rung, *C. W. Wang 65241, 66276,* alt. 3400 m. under forest.

This is a very common fern in the mountains in the Eastern Tibetan Plateau and was previously always confounded with the Himalayan *A. venustum* Don, which proves to be rare in W. China. The species ranges northwards as far as Tai-pei Shan in Shensi Province and Ta-wu-tai Shan in Shansi Province in North China, where it has become a much smaller and simpler form and is known as var. *shensiense* Ching (l. c.).

Plate 219. 1. Habit sketch (natural size). 2. Ultimate pinnule with elongate oblong indusia (× 3). 3. The same with semi-orbular indusia (× 3). 4. Ultimate sterile pinnule, showing venation and serrature (× 3). 5. Scale from the rhizome (× 30). 6–7. Sporangium with spores (× 100).

第 219 圖　長蓋鐵線蕨

Plate 219. ADIANTUM SMITHIANUM (C. Chr.) Ching.

第 二 百 二 十 圖

細葉鐵線蕨（鐵線蕨科）

ADIANTUM VENUSTUM Don

根狀莖細長而廣匍匐狀，有紅棕色闊披針形的鱗片，尤以生長頂端爲多；葉遠生或近生，直立，葉柄長15—20厘米，光亮，紅棕色，光滑無毛，上面有深溝，葉體長圓狀卵形，或三角卵圓形，長15—25厘米，寬與長幾相等，三回羽狀，在羽狀的短頂端以下有羽片5—6對，互生，斜出，有小葉柄，基部一對最大，三角狀卵圓形，在羽狀頂端下爲二回羽狀；一回小羽片4—5對，下部的長5—6厘米，寬約3厘米，有小葉柄，長圓形，近基部羽裂爲2—3片；末回小羽片倒卵狀，基部楔形，長寬各爲6—8毫米，或長過於寬，有小葉柄（柄長1—2毫米，絲狀），上邊圓形或不規則，有許多小三角形急尖齒牙，頂端無芒；葉爲薄草質，乾後爲淡綠色，但常常在成熟後呈灰綠色或淡灰白色；葉脈細而明顯，每一齒牙裏有一條小脈；子囊羣位於每一小羽片的深缺刻裏，常有1—3個，假囊羣蓋圓形或圓腎形，亞膜質，周圍有淡灰色的邊緣。

分佈：四川西北部，西康，雲南西北部，甘肅南部，青海東部；喜馬拉雅山的東北部及阿富汗也產。

本種在中國西部少見，頗近似長蓋鐵線蕨（*Adiantum Smithianum* Ching），但末回小羽片較狹小，有急尖頭三角形齒牙，通常有1—3個子囊羣，假囊羣蓋爲亞圓形，生於末回小羽片上邊緣的深凹裏，葉下面爲灰綠色或淡灰白色，故得以區別。

圖註：1. 本種全形（自然大）。 2. 能育羽片（放大4倍）。 3. 不育羽片（放大4倍）。 4. 根狀莖上的鱗片（放大30倍）。 5—6. 孢子囊及孢子（放大100倍）。

PLATE 220

ADIANTUM VENUSTUM Don

ADIANTACEÆ

ADIANTUM VENUSTUM Don, Prod. Fl. Nepal. 17. 1825; Hook. Sp. Fil. **2:** 40 t. 96 B. 1851; Hook. & Bak. Syn. Fil. 125. 1867; Clarke in Trans. Linn. Soc. II. Bot. **1:** 453. 1880; Bedd. Ferns Brit. Ind. t. 20. 1865; Handb. Ferns Brit. Ind. 86. 1883; Christ, Farnkr. d. Erde 139. 1897; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1:** iv. 284. 1899; C. Chr. Ind. Fil. 35. 1905; in Journ. Wash. Acad. Sci. **17:** 498. 1927; Ching in Acta Phytotax. Sinica **6:** 334. 1957.

Adiantum microphyllum Roxb. in Cal. Journ. **4**: 513. 1844.

Rhizome slender, wide-creeping, clothed especially at the growing apex in reddish-brown broadly lanceolate *scales; fronds* distant or proximate, erect, stipe 15-20 cm long, glossy, chestnut-red, glabrous, deeply grooved above, lamina oblong-ovate or deltoid-ovate, 15-25 cm long, and nearly as broad, tripinnate; *pinnae* 5-6 pairs under the simply pinnate short apex, alternate, oblique, petiolate, the basal pair larger than those above, deltoid-ovate, bipinnate under the simply pinnate apex; *pinnules of the 1st. order* 4-5 pairs, the lower ones 5-6 cm long, about 3 cm broad, petiolulate, oblong, pinnate or 2-3-foliolate below; *ultimate pinnules* obovate-cuneate, 6-8 mm each way or longer than broad, petiolulate (petiolule 1-2 mm long, filiform), the upper edge round or irregularly so, provided with numerous small, deltoid, acutely dentate teeth, never aristate at apices; *texture* thin herbaceous, dry pale green, but often bluish or glaucescent beneath at maturity; *veins* fine, distinct, with one veinlet to each tooth; *sori* usually 1-2 or 3 to each pinnule placed in quite deep sinuses, indusium orbicular or round-reniform, submembranaceous, brown with thinner gray margin all round.

Northwestern Szechuan: Soong-pan Hsien, *K. S. Fu 1699,* alt. 3200 m.; *Harry Smith 4546.* Sikang: Tsa-wa-rung, *C. W. Wang 65723,* alt. 3200 m.; *Tsai Yu-wen 5217,* August 11, 1951. Yunnan: Tibetan border, *Kingdon-ward 662* (1913); *Ducloux 1322;* San-tcha Ho, *Delavay 2,* June 12, 1887 (*A. fimbriatum* Christ, pro parte); Mekong-Salwin Divide, Dokola, *K. M. Feng 5885,* alt. 3100 m.; *T. T. Yü 57729;* Li-kiang, Snow Range, east flank, Black-white Water River, *K. M. Feng 9151;* Atuntze, Bei-ma Shan, *C. W. Wang 69721,* alt. 3000 m.; Weisih Hsien, Yeh-chih, *C. W. Wang 68721,* alt. 3600 m. in rock crevices. Kansu: Sining, Lan-ze-cheon Kou, south of the city, *R. C. Ching 587,* alt. 2650-3100 m. July 23, 1923, in moist forest.

Also Northeast Himalayas and Afghanistan.

This species, which is rather rare in West China, is closely related to *A. Smithianum* Ching, differing in the much smaller and narrower ultimate pinnules with acute deltoid teeth, and usually 1-2 or 3 sori with roundish indusia sunk in deep notches, and in bluish or glaucescent under side of the mature leaves.

Plate 220. 1. Habit sketch (natural size). 2. Fertile pinna (× 4). 3. Sterile pinna (× 4). 4. Scale from rhizome (× 30). 5–6. Sporangium with spores (× 100).

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第 220 圖　細葉鐵線蕨

Plate 220. ADIANTUM VENUSTUM Don

第 二 百 二 十 一 圖

毛足鐵線蕨(鐵線蕨科)

ADIANTUM BONATIANUM Brause

根狀莖細長而廣匍匐，有密生暗褐色鑽狀線形鱗片，尤以生長頂端爲多，且有細毛混生；葉爲二列，直立，相距 1—3 厘米，葉柄長 25—30 厘米，直徑 2 毫米，紅栗色，極光亮，圓形，基部密生深棕色的節狀長剛毛，開展，但易擦落，向上光滑，葉體寬大，有散開廣闊的羽片，長與寬各爲 25—35 厘米，三角狀卵形，鈍頭，四囘羽狀；羽片 6—8 對，互生，斜出，下部一對相距 6—10 厘米，長 13—19 厘米，寬 6—9 厘米，長圓卵形，頂端鈍形，有長柄，三囘羽狀；所有羽片的第一囘小羽片的排列都是顯著的上先出分枝，卽上方基部的一囘小羽片約距中軸 1 厘米，下方基部的距中軸約 3—4 厘米；一囘小羽片在羽狀的短而鈍形頂端下有小羽片 6—7 對，長 4—5 厘米，寬 3 厘米，長圓卵形，有小柄，再次二囘羽狀，二囘小羽片斜出，而上方基部一片顯著地和中軸及小軸平行並重疊；二囘小羽片有 4—5 對，下部的 2—3 對再羽裂爲 3—5 數末囘小羽片，彼此接近，長與寬爲 7—10 毫米，扇形，基部楔形，也有小葉柄(柄長 2—4 毫米)，上邊緣圓形，並有許多寬三角形齒牙，其末端有張開的軟骨質長尖刺頭，這些刺頭有的往往向左偏傾，有的向右，或有時兩個合在一起；葉爲薄草質，柔軟，乾後爲綠色，下面呈微灰綠色，上下兩面光滑；葉脈細而明顯，每一齒牙有一條小脈；子囊羣小形，每一末囘小羽片上邊有 1—2 個(有時爲 3 個)，假囊羣蓋圓腎形，膜質，灰色，宿存，並保持平坦。

分佈：特產中國的西南部，包括四川南部，西康和雲南西北部，向東分佈到昆明的西山和筇竹寺，生常綠闊葉林緣，冬天枯死。

本種與細葉鐵線蕨(*Adiantum venustum* Don)的區別是：葉柄基部有很多淡紅色的節狀長剛毛，葉體遠較寬大和本種特有的長刺頭鋸齒，往往向左方或右方欹斜或二齒基部合生。

圖註：1．本種全形(自然大)。 2—3．能育末囘小羽片(放大 4 倍)。 4．不育末囘小羽片，表示特有的鋸齒型(放大 4 倍)。 5．根狀莖上的鱗片(放大 30 倍)。 6．葉柄基部的長毛(放大 30 倍)。 7—8．孢子囊及孢子(放大 100 倍)。

PLATE 221

ADIANTUM BONATIANUM Brause

ADIANTACEÆ

ADIANTUM BONATIANUM Brause in Hedwigia **54:** 206 t. 4, k. 1914; C. Chr. Ind. Fil. Suppl. II. 1. 1916; Hand-Mzt. Symb. Sin. **6:** 39. 1929; Ching in Sunyatsenia **6:** 13. 1941; in Acta Phytotax. Sinica **6:** 337. 1957.

Adiantum venustum (non Don) Christ in Bull. Acad. Géogr. Bot. Mans. **1906**: 131; C. Chr. Hort. Gotheb. **1**: 92. 1924.

Rhizome slender, wide-creeping, clothed especially at the growing tip in dense, dark brown, linear-subulate *scales* intermixed with long fine hairs; *fronds* distichous, 1-3 cm apart, erect, stipe 25-30 cm long, 2 mm thick, chestnut-red, highly polished, terete, copiously clothed near the base with easily abraded, spreading atro-brown, fine, setose, articulate, long *hairs,* becoming glabrous upwards, lamina ample, with widely separated pinnae, 25-35 cm long and as broad, deltoid-ovate with blunt apex, quadri-pinnate; *pinnae* 6-8 pairs, alternate, oblique, the lower ones 6-10 cm apart, 13-19 cm long, 6-9 cm broad, oblong-ovate with bluntish apex, long-petiolate, tripinnate; the pinnules from the first order onwards in all pinnae are strongly anadromously branched, i.e. the anterior basal pinnule about 1 cm away from the rachis, while the posterior basal one about 3-4 cm away from the rachis; *pinnules of the 1st. order* in the basal pinnae 6-7 pairs under the simply pinnate short blunt apex, 4-5 cm long, 3 cm broad, oblong-ovate, petiolulate, again bi-pinnate under the simply pinnate and blunt apex, oblique, but the anterior basal one strongly deflexed and overlapping the rachis; *pinnules of the 2nd. order* 4-5-jugate, the lower 2-3 pairs again pinnate with 3-5 *ultimate pinnules,* which are contiguous, 7-10 mm each way, cuneate-flabellate, all petiolulate (petiolule 2-4 mm long), rounded on the outer margin and provided with numerous broadly deltoid teeth ended in spreading, cartilaginous long aristate spines, of which some often in a curious manner tip to the right, while others to the left, or sometimes two together; *texture* thin herbaceous, dry green, faintly bluish-green beneath, glabrous; *veins* fine, distinct, one to each tooth; *sori* small, as a rule 1-2 (occasionally 3) to each ultimate pinnule, indusium orbicular-reniform, or reniform, membranaceous, gray, persistent and remains flat.

Type from Tchong Shan, Tali. In distribution this distinct but heretofore much confused species is confined to Southwest China: Southern Szechuan, Sikang and N.W. Yunnan, eastwards to Kunming, where it is a common fern under evergreen forest in Sih-shan, west of the city. From *A. venustum* Don this species can be easily distinguished by the presence at the basal part of stipe of the copious spreading long reddish setaceous hairs to be easily abraded, the much more ample fronds and the characteristically aristate serrature.

Plate 221. 1. Habit sketch (natural size). 2–3. Fertile pinnae, showing sori and characteristic teeth (× 4). 4. Sterile pinnae, showing peculiar type of serrature (× 4). 5. Scale from the rhizome (× 30). 6. Hairs from the base of stipe (× 30). 7–8. Sporangium with spores (× 100).

4

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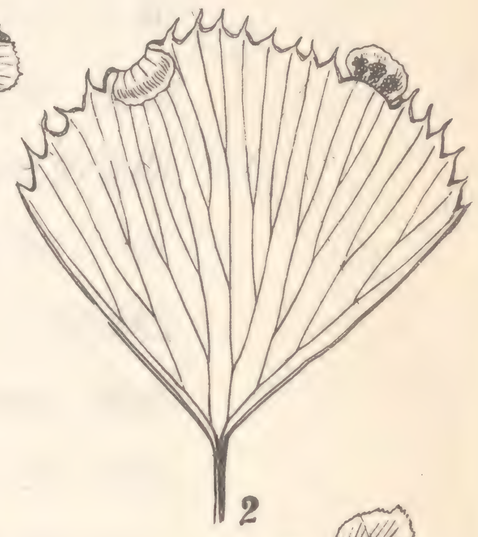
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第 221 圖　毛足鐵線蕨

Plate 221. ADIANTUM BONATIANUM Brause

第 二 百 二 十 二 圖

鶴 慶 鐵 線 蕨 (鐵 線 蕨 科)

ADIANTUM MUTICUM Ching

根狀莖短匍匐狀，斜出，有適量的鱗片，紅棕色，狹披針形，漸尖頭，略堅硬；葉亞簇生，柄長 13—15 厘米，直徑 1.5 毫米，深栗色，光亮，基部以上光滑，葉體長 16—20 厘米，寬 10—13 厘米，三角狀卵形，短漸尖，基部二回羽狀或亞三回羽狀，在一回羽狀頂部以下有羽片 6—7 對，互生，斜出，有長小柄（基部的羽片小柄長 1.5 厘米），亞近生，基部一對稍長於上方的，三角狀長圓形，長 9—11 厘米，寬 3—4 厘米，二回羽狀或有時爲一回羽狀；頂部以下有小羽片 5—7 對，互生，斜出，有小葉柄（柄長 4 毫米，絲狀），一回羽狀或下部的 1—2 對小羽片常由 2—4 個小羽片組成，向上漸變小；末回小羽片寬 1—1.5 厘米，長 1 厘米，寬扇形，基部楔形，頂端的較小，有小葉柄（柄長 4 毫米，絲狀），深二裂超過一半，每裂片又淺裂一次，小裂片或再爲淺二裂或爲不裂，每小裂片有一個亞圓形，腎形或圓腎形的假囊羣蓋聯結 3—5 條小脈，每個末回小羽片有 4—7 個子囊羣，位於深彎缺刻內；葉爲薄草質，乾後亮綠色，上下兩面光滑；不育小羽片爲全緣或波狀，不具鋸齒。

產地：雲南西北部，鶴慶縣，生林下溝內，海拔 3000 米。

本種在一般形體上略似月芽鐵線蕨（*A. edentulum* Christ），但更似鐵線蕨（*A. capillus-veneris* L.），而因其不育小羽片爲全緣或波狀邊緣，子囊羣較短和末位小羽片多次分裂，故與鐵線蕨有所不同，其與月芽鐵線蕨的不同點，則爲其葉體遠較大，寬三角狀卵形，末回小羽片多次分裂，每片有許多圓形子囊羣。

圖註：1．本種全形(自然大)。 2．能育小羽片（放大 3 倍）。 3．同上，分裂較少（放大 3 倍）。 4．不育小羽片，表示全緣和波狀邊緣（放大 3 倍）。 5．根狀莖上的鱗片（放大 20 倍）， 6—7．孢子囊及孢子（放大 100 倍）。

PLATE 222

ADIANTUM MUTICUM Ching

ADIANTACEÆ

ADIANTUM MUTICUM Ching in Bull. Fan Mem. Inst. Biol. New Series **1:** 268. 1949; in Acta Phytotax. Sinica **6:** 339 1957.

Rhizome short-creeping, oblique, moderately scaly, *scales* reddish-brown, narrowly lanceolate, acuminate, rather firm; *fronds* subcaespitose, stipe 13-15 cm long, 1.5 mm across, dark castaneous, glossy, glabrous above the base, lamina 16-20 cm long, 10-13 cm broad, deltoid-ovate, short-acuminate, bipinnate or subtripinnate below; *pinnae* 6-7 pairs under the simply pinnate apical part, alternate, very oblique, long-petiolate, (petiole in the basal pinnae 1.5 cm long), subcontiguous, the basal pair only slightly larger than those next above, deltoid-oblong, 9-11 cm long, 3-4 cm broad, bipinnate or sometimes simply pinnate; *pinnules* 5-7 pairs under the smaller terminal one, alternate, oblique, petiolulate (petiolule 4 mm long, filiform), simple or the lower 1-2 pairs often 2-4-foliolate, gradually decrescent upwards; *ultimate pinnules* 1-1.5 cm broad, 1 cm high, broadly flabellate, cuneate, much smaller towards apex, petiolulate (petiolule 4 mm long), deeply bifid over halfway down with the each half again slightly bifid, the lobules may be again bifid or entire, each bearing one roundish, reniform or round-reniform *sori* connecting 3-5 veinlets, 4-7 sori to each ultimate pinnule, and placed in deep sinuses; *texture* pellucido-herbaceous, dry light green, both sides glabrous; the sterile pinnules with entire or wavy margin, never serrate.

Northwestern Yunnan: Hokin, Shan-chang, Chu-pei-ho, in wooded ravine, *R. C. Ching 23383,* July 27, 1940, common, alt. 3000 m.

This interesting fern more resembles *A. capillus-veneris* L. than *A. edentulum* Christ in general habit, from the former it differs in the sterile pinnules with entire or wavy margin, the shorter sori and the repeatedly lobed pinnules, from the latter in much ample fronds, with broadly fan-shaped and repeatedly lobed ultimate pinnules and the numerous roundish sori to each pinnule.

Plate 222. 1. Habit sketch (natural size). 2. Fertile pinnule (× 3). 3. The same, less divided (× 3). 4. Sterile pinnule, showing entire and wavy margin (× 3). 5. Scale from the rhizome (× 20). 6–7. Sporangium with spores (× 100).

第 222 圖　鶴慶鐵線蕨

Plate 222. ADIANTUM MUTICUM Ching

第二百二十三圖

扇葉鐵線蕨(鐵線蕨科)

ADIANTUM FLABELLULATUM Linné

根狀莖短而直立或斜出，頂部密生銹色的狹鑽狀披針形鱗片；葉簇生，直立，不育葉柄長約 10 厘米，能育葉柄長 25 厘米，近黑色，堅硬，光亮，圓柱狀，但腹面有寬溝，向上部尤爲明顯，基部以上光滑無毛，但上部腹面溝裏有暗銹色短硬毛，葉體爲 2—3 回二叉分歧或有時爲亞二叉分歧，中間的一對羽片較長於側生的，長 10—16 厘米，寬 1.5 厘米，線狀披針形，一回羽狀，下部側生羽片漸短，同樣爲一回羽狀，末回小羽片爲篦齒狀，有小葉柄，在中間的長羽片有許多小羽片，長 8—10 毫米，寬 5—7 毫米，對開式或亞菱形，基部短楔形，下邊切成直線形，外邊與上邊同爲圓形，不育小羽片有微尖鋸齒；葉爲革質，乾後爲棕色，上下兩面光滑無毛，上面略爲光亮，下面微灰白色(新鮮標本爲灰綠色)，但葉軸，小葉軸和葉柄上面沿溝槽有暗銹色短毛密生；葉脈扇形分叉，上下兩面顯著；子囊羣圓腎形或橫生長圓形，每小羽片有 2—5 個，假囊羣蓋黑色，革質，爲淺缺刻分開。

分佈：本種爲亞洲熱帶和亞熱帶的廣佈種，在中國分佈於台灣，海南，廣東，廣西，貴州，福建，和江西，湖南，四川，雲南，浙江等省的南部；香港也有。爲一種喜光植物，生在乾旱丘陵地區的酸性土壤的雜木林緣。

圖註：1. 本種全形（自然大）。 2. 能育羽片（放大 4 倍）。 3. 不育羽片，表示有微尖鋸齒的邊緣（放大 4 倍）。 4. 葉柄基部的鱗片（放大 50 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 223

ADIANTUM FLABELLULATUM Linné

ADIANTACEÆ

ADIANTUM FLABELLULATUM Linné Sp. Pl. **2:** 1095, 1753; Sw. Syn. Fil. 121. 1806; Hook. Sp. Fil. **2:** 30. 1851; in Journ. Bot. **1857:** 330; Hook. & Bak. Syn. Fil. 120. 1867; Benth. Fl. Hongk. 447. 1861; Bedd. Ferns South. Ind. t. 218. 1864; Handb. Ferns Brit. Ind. 88. 1883; Fr. et Sav. Enum. Pl. Jap. **2:** 454. 1880; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1**: iv. 284. 1899; C. Chr. Ind. Fil. 26. 1905; Matsum. et Hayata, Enum. Pl. Form. 617 1906; Dunn & Tutcher, Fl. Kwangt. and Hongk. 338. 1912; C. Chr. in Acta Hort. Gotheb. **1:** 95. 1924; Hand-Mzt. Symb. Sin. **6:** 39. 1929; Ogata, Ic. Fil. Jap. **2:** t. 52. 1929; Wu, Pong & Wong, Polyp. Yaoshan. in Bull. Dept. Biol. Sunyatshan Univ. No. **3:** 226, t. 104. 1932; Tard. et C. Chr. in Fl. Gen. Ind. **7:** 189. 1940; Ching in Acta Phytotax. Sinica **6:** 326. 1957.

Adiantum fuscum Retz. Obs. **2**: 28, t. 5. 1781.

Adiantum amoenum Wall. List n. 78. 1828 (nom. nud.); Hook. & Grev. Ic. Fil. t. 103. 1829; Hook. in Lond. Journ. Bot. **1**: 294. 1840.

Rhizome short, erect or oblique, densely clothed in ferruginous-brown, narrowly lanceolate, subulate *scales* attached by base; *fronds* tufted, erect, stipe of the sterile about 10 cm long, of the fertile to 25 cm long, blackish, firm, glossy, terete beneath, but broadly grooved on the upper side especially towards the upper part, glabrous above the basal part, but rusty-hirsute in the groove upwards, lamina 2-3 dichotomously forked, or nearly so, with the *central pinnae* longer than the lateral ones, 10-16 cm long, 1.5 cm broad, linear-lanceolate, simply pinnate, the other lower pinnae progressively shortened downwards and similarly pinnate; *ultimate pinnules* pectinate, petiolulate, numerous in the central pinnae, 8-10 mm long, 5-7 mm broad, dimidiate, subrhomboidal, base short-cuneate, the lower edge straight, the inner oblique, the outer roundish and, like the upper edge, rather sharply dentate in the sterile part; *texture* subcoriaceous, dry brown, both sides glabrous, slightly glossy above, faintly glaucescent below (bluish in living state), upper part of rachis, rachilets and petiole always densely and shortly rusty-hirsute on the upper side; *veins* flabellately forked, prominent on both sides; *sori* roundish, reniform or transversely oblong, 2-5 to each pinnule, indusium dark-colored, coriaceous, separated by shallow sinuses.

A widely dispersed species in tropical and subtropical regions of Asia. In China numerous specimens have been seen from Hainan, Kwangtung, Kwangsi, Kweichow, southern part of Fukien, Kiangsi, Hunan, Szechuan, Yunnan, Chekiang and Taiwan, also Hongkong. A light-demanding fern growing in exposed hillsides with acid soil.

Plate 223. 1. Habit sketch (natural size). 2. Fertile pinna (× 4). 3. Sterile pinna, showing dentate margin (× 4). 4. Scale from the base of stipe (× 50). 5–6. Sporangium with spores (× 100).

第 223 圖　扇葉鐵線蕨

Plate 223. ADIANTUM FLABELLULATUM Linné

第二百二十四圖

海南鐵線蕨（鐵線蕨科）

ADIANTUM INDURATUM Christ

體形一般與扇葉鐵線蕨（*Adiantum flabellulatum* Linné）極近似，但因葉體爲羽狀分枝而不是二叉分枝，葉柄，葉軸，及小葉軸爲圓柱形（上面不具縱溝槽）和末回小羽片幾爲圓形或亞圓形，不育葉的小羽片上有微鈍齒牙或圓齒狀齒牙，故有不同。

分佈：海南，廣西南部和越南北部。

本種在我國爲稀見的蕨種，只發現於海南島及廣西南部，這可以進一步證明海南島植物區系的許多組成種類與越南北部有相當密切關係。

圖註：1．本種全形（自然大）。　2．能育羽片（放大4倍）。　3．不育羽片，表示有圓齒狀齒牙的葉緣（放大4倍）。　4．葉柄基部的鱗片（放大40倍）。　5—6．孢子囊及孢子（放大100倍）。

PLATE 224

ADIANTUM INDURATUM Christ

ADIANTACEÆ

ADIANTUM INDURATUM Christ in Journ. Bot. France **1:** 233, 265. 1908; C. Chr. Ind. Fil. Suppl. I. 4. 1912: Tard. et C. Chr. in Fl. Gen. Ind. **7:** 187. 1940; Ching in Acta Phytotax. Sinica **6:** 327. 1957.

In the gross habit, the present species very closely resembles *A. flabellulatum* L., but differs chiefly and specifically in the fronds being not dichotomously but rather pinnately branched, in the terete stipe, rachis and rachilets and in the almost orbicular ultimate pinnules even in the sterile fronds with sterile pinnules not sharply but rather bluntly dentate or even crenate-dentate.

Hainan: Chang-kiang Hsien, Ka-chik Shan, *S. K. Lau 2925,* December 22, 1933, in the thickets on dry gentle hillside of clayey soil, rare; *Liang-Chian-ta 66493,* under brush wood, December 20, 1933. Kwangsi, Pei-seh Hsien, Ecological Survey Party, Bot. Inst. Academia Sinica, without number.

Tonkin: *Eberhardt* (type); *Chevalier 3062.*

A rather rare fern in the region. Its discovery in Hainan may serve as further evidence that the flora of the island is closely related to that of the northeastern part of Indo-China.

Plate 224. 1. Habit sketch (natural size). 2. Fertile pinna (× 4). 3. Sterile pinna, showing crenate-dentate margin (× 4). 4. Scale from the base of stipe (× 40). 5–6. Sporangium with spores (× 100).

第 224 圖　海南鐵線蕨

Plate 224 ADIANTUM INDURATUM Christ

第 二 百 二 十 五 圖

長 尾 鐵 線 蕨 (鐵 線 蕨 科)

ADIANTUM DIAPHANUM Blume

根狀莖短而直立，有密的根叢，頂端有頗多的紅棕色小鱗片，披針形，漸尖頭，全緣；葉簇生，柄長10—18厘米，直立光滑，鐵絲狀，幾爲黑色，基部有疏生鱗片，而向上部光滑，腹面有寬縱溝，葉體與葉柄等長，分裂度的變化很大，有時爲線狀披針形，一囘羽狀，有時爲不完全的二囘羽狀，基部發生1—3條有柄的一囘羽狀的較短羽片，寬2—3厘米，頂端鈍漸尖頭；在中央的主枝有許多羽片，近生，斜出，有短小葉柄，長1—2厘米，寬7—10厘米，對開式，亞菱形，下邊切成直線，裏邊爲截形或微內彎，外邊爲圓形或斜形，如同上邊一樣，有圓齒（在能育羽片上），或有齒牙（在不育羽片上）；葉質薄而近乎半透明，深綠色，乾後暗綠色，葉軸光滑無毛；但在小羽片下面的小脈間有許多紅棕色伏貼的單細胞的細剛毛，葉脈明顯，光滑無毛，假囊羣蓋圓腎形，暗色，革質，着生在深而狹的彎缺裏，每小羽片的外邊和上邊共有5—8個，彼此分開。

分佈：本種廣佈於印尼，馬來亞，澳大利亞，新西蘭及熱帶和亞熱帶亞洲，在中國僅產海南，廣東、福建及台灣；越南也有。

本種形體特殊，不易與本屬中的其他中國蕨種混淆，雖然與毛葉鐵線蕨（*Adiantum pubescens* Schkuhr）有許多相似之點，但後者的葉柄和葉體上有密生的毛和葉體爲二叉分歧，故易區別；本種與其他鄰近的種也有不同，卽葉柄腹面有寬溝（不是圓柱形）並且孢子囊不僅着生在小脈上而且也着生於小脈間的葉面上。

var. **affine** v. A. v. R. (l. c.) 變種。本變種不同於原種之點僅爲其葉體下面光滑無毛，乾後爲橄欖綠。分佈於我國海南和福建；印度尼西亞和馬來亞也有。

圖註：1. 本種全形（自然大）。 2. 能育羽片（放大3倍）。 3. 不育羽片，表示有牙齒的葉緣（放大3倍）。 4. 葉柄基部的橫切面（放大）。 5. 葉柄基部的鱗片（放大60倍）。 6. 葉體下面的細剛毛(放大100倍)。 7. 假囊羣蓋的下面，表示孢子囊及細剛毛的分佈（放大100倍）。 8—9. 孢子囊及孢子(放大100倍)。

PLATE 225

ADIANTUM DIAPHANUM Blume

ADIANTACEÆ

ADIANTUM DIAPHANUM Blume, Enum. Pl. Javae 215. 1828; Hook. Sp. Fil. **1:** 10 t. 80 C. 1851; Hook. & Bak. Syn. Fil. 117. 1867; Benth. Fl. Austr. **7:** 725. 1878; Diels in Engl u. Prantl, Nat. Pflanzenfam. **1:** iv. 286. 1899; C. Chr. Ind. Fil. 25. 1905; Copel. Polyp. Phil. 93. 1905; Matsum. et Hayata, Enum. Pl. Form. 617. 1906; v. A. v. R. Handb. Mal. Ferns 323. 1908; Ogata, Ic. Fil. Jap. **6:** t. 251. 1935; Tagawa in Journ. Jap. Bot. **14:** 393. 1938; Tard. et C. Chr. in Fl. Gen. Ind. **7:** 183. 1940; Ching in Acta Phytotax. Sinica **6:** 321. 1957.

Adiantum setulosum J. Sm. in Bot. Mag. **72**: Comp. 22. 1846.

Adiantum affine Hook. Sp. Fil. **1**: 32. 1851 (non Willd.).

Rhizome short, erect, densely radicose, moderately clothed at the apex in reddish-brown, small, lanceolate-acuminate, entire *scales; fronds* fasciculate, stipe 10-18 cm long, erect, polished, wiry, nearly black, sparsely scaly near the base but glabrous upwards, with a broad groove on the upper side, lamina as long as the stipe, varies from linear-lanceolate and simply pinnate to bipinnate at the base with 1-3 additional stalked simply pinnate shorter pinnae, 2-3 cm broad, apex bluntly acuminate; *pinnae* in the main central branch numerous, contiguous, oblique, shortly petiolate, 1-2 cm long, 7-10 mm broad, dimidiate, subrhomboidal, the lower edge quite straight, the inner truncate or slightly recurved, the outer roundish or oblique and crenate like the upper edge with round entire teeth (in the soriferous pinnae), or dentate (in the sterile pinnae); *texture* thin, nearly pellucid, dark green, dry opaque green, rachis glabrous, with moderate reddish-brown appressed bristle-like unicellar hairs between the veinlets on the under side of pinnules; *veins* distinct, glabrous; *sori* small, round-reniform, indusium dark-colored, coriaceous, attached to the deep narrow sinuses, 5-8 round the outer and upper edge, distant.

Hainan: Five Finger Mt. *Mrs. Eryl Smith 1471, 1464; Tsang and Tung 17829* ex Herb. Lingnan Univ.; Mei Hsien, Yam Na Shan, *W. T. Tsang 21556.* Fukien: Foochow, *Forbes 2487; H. H. Chung 3798,* August 18, 1925; Minchow, *H. H. Chung 2292;* Amoy, *Swinhoi* in Herb. Hance (1857); *Hance 1411;* Inghock, *H. H. Chung 1340, 2634,* June 14, 1923; Yung-chung, *Rankin* (1913); Hinghwa, *Lin Pi 6538;* Lien-kiang Hsien, *D. C. Liu 84;* Nan-tsin Hsien, *H. C. Chao F22,* April 20, 1954. Taiwan: *Hancock 35; Suzuki-Tokio 20920,* Nov. 16, 1940 under forest, alt. 650 m.

A widely dispersed species in the tropics and subtropics in Asia, Polynesia, Australia and New Zealand.

A very distinct species not easily to be confounded with any other Chinese species of the genus perhaps except *A. pubescens* Schkuhr., which has dichotomously forked fronds and densely pubescent stipe and lamina. The species is further differentiated from its relatives in having stipe broadly grooved on the upper side (not terete) and the sporangia borne on the veinlets as well as on the parenchymatic tissues between the veinlets.

There is a form in Malaysia having lamina devoid of the characteristic hairs on the under side and dry olive-green; it is called var. *affine* v. A. v. R. (l. c.), and is also known from Hainan and Fukien (*C. Wang 35202, 35784* from Hainan; *Tang Siu Ging 16359* from Hok-chiang, Fukien).

Plate 225. 1. Habit sketch (natural size). 2. Fertile pinna (× 3). 3. Sterile pinna, showing dentate margin (× 3). 4. Cross section of the basal part of stipe (greatly enlarged). 5. Scale from the base of stipe (× 60). 6. Hairs from the under side of lamina (× 100). 7. Under side of indusium, showing the distribution of sporangia and hairs (× 10). 8–9. Sporangium with spores (× 100).

第 225 圖　長尾鐵線蕨

Plate 225 ADIANTUM DIAPHANUM Blume

第二百二十六圖

掌葉鐵線蕨（鐵線蕨科）

ADIANTUM PEDATUM Linné

根狀莖粗大，厚木質，短匍匐狀，斜出，有密生根叢，頂端有密生的棕色披針形鱗片；葉簇生，葉柄長15—35厘米，光亮，栗褐色，基部以上光滑，葉體長18—35厘米，寬與長相等或較寬，自葉柄頂端二叉平分爲左右兩半邊的彎弓側枝，從每個側枝上邊生有等距的約4—6條向上的一回羽狀的線狀披針形羽片，中間的一對羽片最發達，長12—28厘米，寬2.5—3.2厘米，直立；小羽片多數，篦齒狀，有小葉柄，開展，長1.3—2厘米，基部寬約7毫米，對開式，下邊直切，基部上方近葉軸處較寬，頂端鈍形，有幾個微鈍齒牙，上邊分裂，有時裂至1/3處；兩邊側生羽片向外漸短，直至外頂端的一條，長僅4—6厘米，也有同形的小羽片；葉爲薄草質，上面爲亮綠色或暗綠色；葉脈明顯，二叉分枝；每小羽片上通常有3—4個子囊羣，假囊羣蓋爲腎形至橫生長圓形。

分佈：本種廣佈於北半球温帶森林中，在我國見於東北，內蒙，山西，陝西（秦嶺），河南，甘肅，雲南西北部，四川西南部高山，西康及西藏高原；喜馬拉雅（海拔2300—3000米），日本，朝鮮，西伯利亞東部，蘇聯遠東部分及美國北部也產。

圖註：1．本種全形（自然大）。　2．能育小羽片（放大3倍）。　3．不育小羽片，表示分裂的邊緣（放大3倍）。　4．葉柄基部的鱗片（放大20倍）。　5—6．孢子囊及孢子（放大100倍）。

PLATE 226

ADIANTUM PEDATUM Linné

ADIANTACEÆ

ADIANTUM PEDATUM Linné Sp. Pl. **2:** 1095. 1753; Thunb. Fl. Jap. 339. 1781; Sw. Syn. Fil. 121. 1806; Hook. Sp. Fil. **2:** 28. 1851; Hook. & Bak. Syn. Fil. 125. 1867; Franch. Pl. David. **1:** 348. 1884; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1:** iv. 284. 1899; in Bot. Jahrb. **29:** 200. 1900 (pro parte); Kom. Fl. Mansh. **1:** 143. 1901; C. Chr. Ind. Fil. 31. 1905; in Bot. Gaz. **56:** 331. 1913; Ogata, Ic. Fil. Jap. **4:** t. 151. 1931; Kitagawa in Rep. 1st. Sci. Exped. Manch. **4:** ii. 87. 1935; Tagawa in Journ. Jap. Bot. **14:** 392. 1938; Kitagawa, Lineamenta Fl. Mansh. 26. 1939; Ching in Acta Phytotax. Sinica **6:** 322. 1957.

Adiantum pedatum L. var. *glaucinum* (non Christ) C. Chr. in Journ. Wash. Acad. Sci. **17**: 498. 1927.

Rhizome thick, woody, short-creeping, oblique, densely radicose, and clothed at the apex with brown, broadly lanceolate *scales; fronds* caespitose, a few together, stipe 15-35 cm long, polished, chestnut-brown, glabrous above the base, lamina 18-35 cm long, as broad or broader, forked from the top of stipe into two spreading curved main lateral branches, each having 4-6 equally spaced, simply pinnate linear-lanceolate pinnae on the upper side; *central pinnae* are the most developed, 12-28 cm long, 2.5-3.2 cm broad, erect; *pinnules* numerous, pectinate, petiolulate, patent, 1.3-2 cm broad, about 7 mm broad at base, dimidiate, broader on the upper side nearest to the rachis, apex obtuse with a few blunt teeth, the upper margin lobed, sometimes one-third way down; the lateral pinnae become gradually shorter and shorter as they go outwards, and the outermost are only 4-6 cm long with similar pinnules; *texture* thin herbaceous, light green or bluish green on the under side; *veins* distinct, dichotomous; *sori* usually 3-4 to each pinnule along the upper margin, indusium reniform to transversely oblong.

A widely distributed species in forests of the temperate zone in the Northern Hemisphere. In China specimens have been seen from the Northeastern Provinces (Manchuria), Chahar, Mongolia, Shansi, Shensi (Tsing-ling Range) Honan, Kansu, W. Yunnan, Szechuan, Sikang and Tibet.

Also in the Himalayas (alt. 2300-3000 m.), Japan, Korea, Eastern Sibiria, the USSR Far East and Northeastern America.

Plate 226. 1. Habit sketch (natural size). 2. Fertile pinnule (× 3). 3. Sterile pinnule, showing lobed upper margin (× 3). 4. Scale from the base of stipe (× 20). 5–6. Sporangium with spores (× 100).

第 226 圖　掌葉鐵線蕨

Plate 226 ADIANTUM PEDATUM Linné

第二百二十七圖

灰背鐵線蕨（鐵線蕨科）

ADIANTUM MYRIOSORUM Baker

根狀莖厚而粗壯，木質，斜出，頂端密生深棕色的堅厚鱗片，披針形，漸尖頭，全緣；葉簇生，直立，葉柄長 12—25 厘米，粗壯，黑色，極光亮，圓形，基部以上光滑，葉體長 25—35 厘米，寬與長相等，葉柄頂端以銳角二叉平分爲左右兩半邊，從彎弓形而多曲折的兩邊側枝上面生出等距的 3—6 對一回羽狀的線狀披針形直立羽片，中間的一對最長，長達 25—35 厘米，向外逐漸順次變短，最外面的羽片（頂生的）長僅 7—10 厘米，中間的羽片寬 3—3.5 厘米，有許多小羽片（約 45 對），有小葉柄，近生，篦齒狀，水平開展，爲三角形的對開式，長 1.2—1.6 厘米，基部上方斜形或截形，寬 7 毫米，下邊直切，上邊同樣爲直線形，有鋸齒，並在亞急尖或鈍形的頂端常有 3—5 個尖頭三角形齒牙，在頂生小扇形的小羽片下，側生小羽片較下部的逐漸變小，外緣的一條羽片上的小羽片也是同形，但較少，最外面的一條羽片約由 10—15 對小羽片組成；葉爲草質，上面綠色，下面灰綠色，上下兩面光滑；葉脈細而明顯，到達每一齒牙的頂端；子囊羣圓形或橫生腎形，每片有 4—5 個，生於淺缺刻裏，爲凹口分開，假囊羣暗色，有淺色膜質的寬邊緣；孢子爲尖四面體，淺棕色，透明而光滑。

分佈：本種爲我國西南部特有的蕨種，分佈於四川（峨嵋山），貴州，湖北西部及雲南西北部亞高山，常見於海拔 1000—1500 米的森林下，在峨嵋山尤多。本種在一般形體上酷似北温帶的掌葉鐵線蕨（*Adiantum pedatum* L.），曾被以前學者認爲同義詞或變種看待，但因葉柄幾乎爲黑色，葉的上面光亮，小羽片顯然爲三角形，其急尖或鈍形頂端有 3—6 個尖三角形齒牙，上邊有密鋸齒，每小羽片上邊有略爲圓形或較圓的假囊羣蓋和根狀莖有深棕色光亮較狹又堅厚的鱗片等特徵，故大有區別。在地理分佈上，本種生長在低海拔或低緯度地方，這裏掌葉鐵線蕨已不能生存。

圖註：1．本種全形（自然大）。 2．能育羽片（放大 3 倍）。 3．不育羽片，表示上邊緣的尖鋸齒（放大 3 倍）。 4．葉柄基部的鱗片（放大 20 倍）。 5—6．孢子囊及孢子（放大 100 倍）。

PLATE 227

ADIANTUM MYRIOSORUM Baker

ADIANTACEÆ

ADIANTUM MYRIOSORUM Baker in Kew Bull. Misc. Inform. **1898:** 230; Ching in Bull. Fan Mem. Inst. Biol. Bot. Ser. **11:** 54. 1941 cum descr.; in Acta phytotax. Sinica **6:** 324. 1957.

Adiantum pedatum L. var. *myriosorum* Christ in Bull. Herb. Boiss. II. **1903:** 511; in Bull. Soc. Bot. France **52**: Mém. I. 111, 510. 1905.

Adiantum pedatum (non L.) Diels in Bot. Jahrb. **29**: 200. 1900; Christ in Bull. Soc. Bot. France **52**: Mém. I. 62. 1905; in Bot. Gaz. **51**: 346. 1911; C. Chr. in Acta Hort. Gotheb. **1**: 95. 1924; Hand-Mzt. Symb. Sin. **6**: 38. 1929 (pro parte).

Adiantum pedatum L. var. *glaucinum* Christ in Bull. Herb. Boiss. **6**: 957. 1898; C. Chr. in Contr. U. S. Nat. Herb. **26**: 310. 1931.

Adiantum pedatum L. var. *protrusum* Christ in Bull. Acad. Géog. Bot. Mans. **1904:** 110.

Rhizome strong, thick, woody, oblique, densely clothed at growing apex in dark brown, firm, lanceolate, acuminate, entire *scales; fronds* caespitose, a few together, erect, stipe 12-25 cm long, stout, ebeneous, highly polished, terete, glabrous above the base, lamina 25-35 cm long and as broad, forked from the top of stipe under an acute angle into two spreading, curved, flexuose lateral branches, from the upper side of which spring 3-6 equally spaced, simply pinnate, linear-lanceolate upright *pinnae* on each side of the two equal halves, the *two central pinnae* much the longest, 25-35 cm long, the others gradually shortened as they go outwards, with the *outermost* (*the terminal*) *pinnae* 7-10 cm long and spreading; the central pinnae 3-3.5 cm broad, with numerous (to 45 pairs), close, pectinate, horizontally patent, triangular, dimidiate and petiolulate *pinnules,* 1.2-1.6 cm long, 7 mm broad at the upper-inner, straight or oblique base, the lower edge cut straight, the upper edge also straight and serrate under the acute apex, which is always provided with 3-5 rather sharply deltoid teeth, the upper pinnule gradually smaller below the small narrowly fan-shaped terminal one, the pinnules of the outer pinnae being similar but decreased in number, and the outermost pinnae consisting of only about 10-15 pinnules; *texture* herbaceous, green above, glaucescent below, glabrous in all parts; *veins* fine and distinct, one to each apical tooth; *sori* roundish or transversely reniform, attached to shallow sinuses, 4-5 along the upper edge of each pinnule, separated by a notch, indusium dark-colored with broad, pale-colored membranaceous margin; spores sharply tetraedric, pale-brown, transluscent and smooth.

A distinct and pretty fern endemic in Southwest China: Szechuan (Mt. Omei), Kweichow, Western Hupeh and N.W. Yunnan, where the fern is locally abundant under forests at elevations from 1000-1500 m.

In general habit this species exactly resembles *Adiantum pedatum* L. of Northeast Asia and North America, to which it was previously reduced as a synonym or a variety, but it differs in the almost black stipe, glaucescent underside of fronds, decidedly triangular pinnules invariably provided with 3-6 rather sharply deltoid teeth at the acute or blunt apex and with serrate upper margin, the generally roundish and more numerous indusia to each pinnule and in the dark brown, glossy, narrower, firmer scales on rhizome. It grows at a lower elevation.

Plate 227. 1. Habit sketch (natural size). 2. Fertile pinna (× 3). 3. Sterile pinna, showing serrate upper margin (× 3). 4. Scale from the base of stipe (× 20). 5–6. Sporangium with spores (× 100).

第 227 圖　灰背鐵線蕨

Plate 227 ADIANTUM MYRIOSORUM Baker

第二百二十八圖

毛葉茯蕨(金星蕨科)

LEPTOGRAMMA MOLLISSIMA (Fisch.) Ching

根狀莖短而直立或斜生，有密的長根叢；葉簇生，柄長 20—30 厘米或較長，禾稈色，頗粗大，下半部有暗棕色闊披針形有剛毛的鱗片和開展的灰白色針狀長剛毛混生，同樣的剛毛向上分佈到中軸全部，葉體長 20—35 厘米，寬 10—20 厘米，長圓形，漸尖頭，向基部不變狹，一回羽狀，頂端爲羽狀深裂；羽片 15—20 對，開展，下部爲闊缺刻分開，向上較接近，下部 6—8 對分離，幾無柄，上部各對向頂端愈來愈多合生，基部一對長與上方一對相等或有時稍長，水平開展，常爲亞鐮刀形，基部等形，變狹，或等闊，中部各對長 5—10 厘米，寬 1—1.5 厘米，線狀披針形，漸尖頭，基部等形，截形，羽狀深裂到 1/2 深處，成許多斜出長圓形的圓頭裂片；葉爲草質，乾後爲淡棕綠色，中軸及羽片上下兩面有開展的針狀灰白長剛毛；葉脈在裂片 5—6 對，分離，斜出，稍彎弓，僅基部上方一脈達於缺刻底部；子囊形長形，沿生於下部幾對葉脈，有剛毛，因每個子囊具有向上直立的 5—6 根針狀剛毛所致。

產地：福建北部仙霞嶺及台灣阿里山。

本種廣佈於印度南部，錫蘭，中國東部和日本，向北展伸到北海道及朝鮮南部。在中國却少見，過去關於本種在中國西部的報導實爲錯誤，而是：

雲南茯蕨（**Leptogramma yunnanensis** Ching）新種。

葉體較狹長，一般寬 6—8 厘米，羽片斜向上，較短較闊，長 4—5 厘米，基部寬 1.2—1.7 厘米，短漸尖頭或亞急尖頭，中軸及中肋和小肋下面有較短而較細軟的毛。

產地：雲南西北部，維西，瀾滄怒江分水嶺，馮國楣號碼 4474，生林下溝中，海拔 2100 米；貢山，菖蒲桶，馮國楣號碼 7366，生雜木林下，海拔 1900—2000 米。

圖註：1．本種全形（自然大）。 2．羽片的一部，表示葉脈及子囊羣（放大 4 倍）。 3．葉柄基部的鱗片（放大 20 倍）。 4．葉柄上的剛毛（放大 40 倍）。 5—6．孢子囊及孢子（放大 100 倍）。

PLATE 228

LEPTOGRAMMA MOLLISSIMA (Fisch.) Ching

THELYPTERIDACEÆ

LEPTOGRAMMA MOLLISSIMA (Fisch.) Ching in Sinensia. **7:** 102 t. 9. 1936.

Gymnogramma mollissima Fisch. ex Kunze in Linnaea **23**: 255, 310. 1850.

Gymnogramma totta Hook. Sp. Fil. **5**: 138, 1864; Hook. & Bak. Syn. Fil. 376. 1867 (pro parte).

Dryopteris africana C. Chr. Ind. Fil. 250. 1905; Suppl. III. 80 1933 (pro parte); Ogata, Ic. Fil. Jap. **1**: t. 20. 1928.

Leptogramma Loveii Nakai in Bot. Mag. Tokio **45**: 103. 1931 (non J. Sm. 1841).

Rhizome short, erect, or oblique, densely radicose; *fronds* caespitose, stipe 20-30 cm or longer, stramineous, rather strong, copiously clothed in dark brown, broad-lanceolate and setose *scales* and also spreading setose needle-like gray *hairs,* which extend upwards throughout the rachis, lamina 20-35 cm long, 10-20 cm broad, oblong, acuminate, base not narrowed, simply pinnate; *pinnae* 15-20 pairs under the pinnatifid apical part, patent, separated by broad sinuses below, closer upwards, the lower 6-8 pairs free and subsessile, the upper ones becoming more and more adnate upwards, the basal pair as long as the upper next one, or even longer, horizontally patent, often subfalcate and slightly broader above the contracted lower side of the base, the middle ones 5-10 cm long, 1-1.5 cm broad, linear-lanceolate, acuminate, base equal, truncate, pinnatisect to half way down into many oblong, rounded and oblique *lobes; texture* herbaceous, dry brownish-green, rachis and both sides with spreading, needle-like long gray hairs; *veins* in the lobes 5-6 pairs, oblique, curved, only the anterior basal vein runs to the sinus; *sori* elongate-oblong, along the several lower veins, setose, due to the setose sporangia.

Fukien: Sih-Ya-ling on the border of southern Chekiang, *Chiu Pei-chih 109*, August, 1953. Taiwan: Mt. Arisan.

Widely distributed from Southern India, Ceylon, East China to Taiwan and Japan as far north as Hokaido and Korea. In China however, it is a rare fern. Plants from West China previously referred to the present species should be:

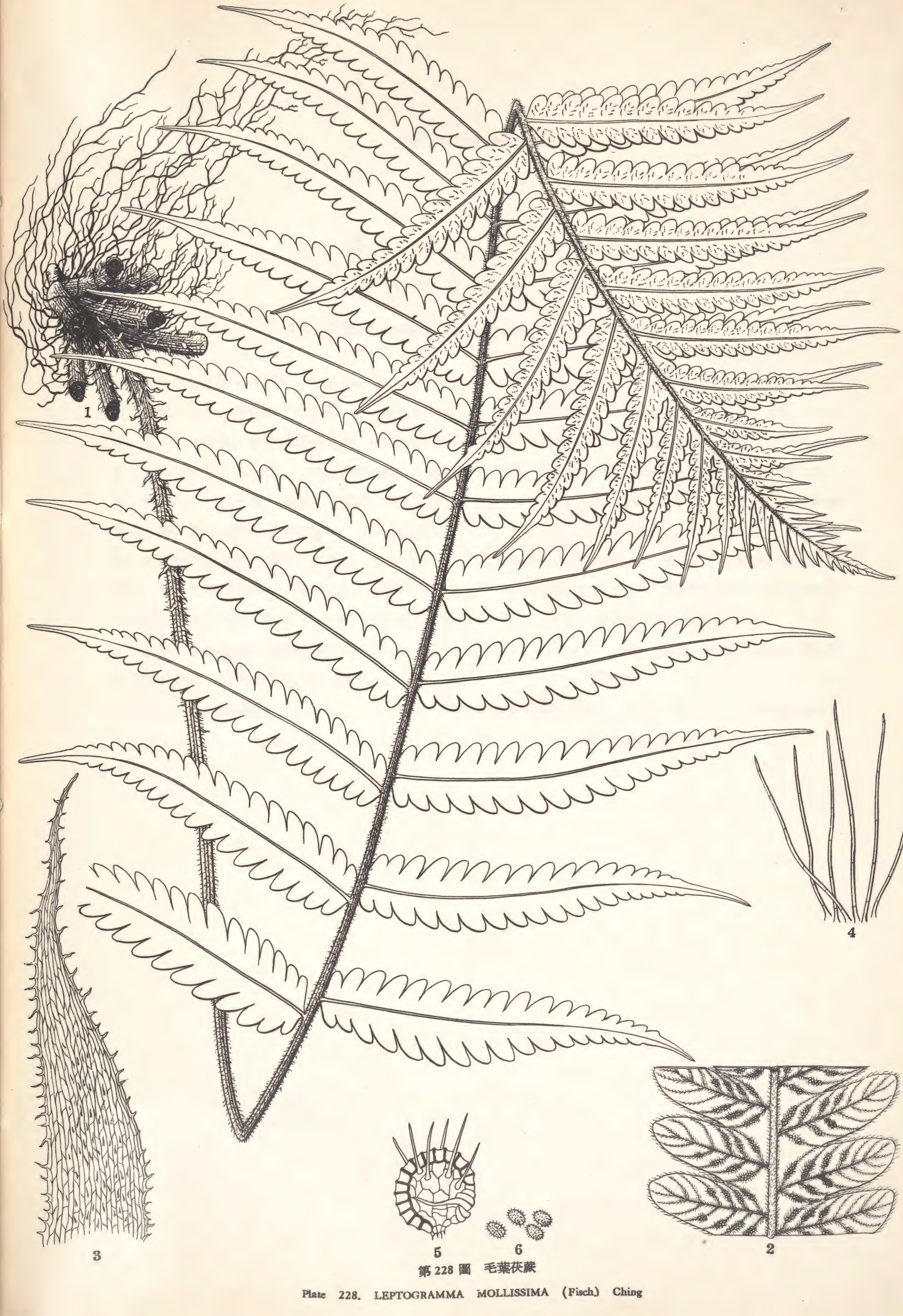
Leptogramma yunnanensis Ching, sp. nov.

Fronde anguste elongata, plerumque 6-8 cm lata, pinnis lateralibus obliquis, brevioribus latioribusque, 4-5 cm longis, 1.2-1.7 cm basi latis, breviter acuminatis aut subacutis, rachide et lamina subtus secus costam costulamque pilis brevioribus molliter obtectis.

N.Y. Yunnan: Weisih Hsien, Mekong-Salwin Divide, *K. M. Feng 4474* in wooded ravine, alt. 2100 m.; Kong Shan Hsien, Chonmutung, *K. M. Feng 7366,* in thickets, alt. 1900-2000 m.

The plants from Northern India referred to by Clarke and Hope may also belong here rather than to *L. mollissima* of S. India.

Plate 228. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation and sori (× 4). 3. Scale from the base of stipe (× 20). 4. Hairs from the stipe (× 40). 5–6. Sporangium with spores (× 100).



第 228 圖　毛葉茯蕨

Plate 228. LEPTOGRAMMA MOLLISSIMA (Fisch.) Ching

第 二 百 二 十 九 圖

峨 眉 茯 蕨（金 星 蕨 科）

LEPTOGRAMMA SCALLANI (Christ) Ching

根狀莖短而直立或斜生，有密的根叢；葉簇生，柄長 6—12 厘米，暗禾稈色，基部有適量的鱗片及密生的剛毛，鱗片棕色，披針形，有剛毛附生，剛毛灰白色，長針形，由單細胞組成，葉體通常長 12—20 厘米，或較長，寬 7—10 厘米，狹三角狀長圓形，漸尖頭，基部不變狹，間或稍狹，一回羽狀；頂部爲羽狀深裂；羽片約爲 10 對，斜向上，頗接近，下面幾對分離，並有明顯的短柄，向上部各對愈來愈多的合生，基部一對長同上面一對，很少有時較短，幾爲水平開展，中部羽片 4—5 厘米，一般寬 6—8 毫米，罕較寬，披針形，急尖頭或亞漸尖頭，基部相等，截形或圓形，羽狀深裂到大約 1/2 深處，成 10 對的斜出三角卵形全緣的裂片；葉質粗糙，乾後淡棕色或淡褐綠色，在中軸，中肋及小肋下面有適量的灰白色針狀開展的剛毛，上面光滑，惟中肋有短毛；葉脈在裂片爲 4 對，分離，斜出，彎弓，基部上方一脈達於缺刻底部，下方一脈達於葉邊，下面有剛毛；子囊羣長圓形，通直，每片 1—2 對，沿生於下二對脈上，有毛，因子囊頂部有 4 根直立針狀剛毛。

分佈：本種爲長江南岸各省的特有種，自四川（峨嵋山）向東經貴州，廣西，湖南，江西（廬山）達於浙江及安徽南部，向南經雲南達於越南北部，生於海拔 400—1000 米的林下溝邊。

圖註：1．本種全形（自然大）。　2．羽片的一部，表示葉脈及子囊羣（放大 4 倍）。　3．葉柄基部的鱗片（放大 30 倍）。　4．葉柄基部的針狀剛毛（放大 60 倍）。　5—6．孢子囊及孢子（放大 100 倍）。

PLATE 229

LEPTOGRAMMA SCALLANI (Christ) Ching

THELYPTERIDACEÆ

LEPTOGRAMMA SCALLANI (Christ) Ching in Sinensia **7:** 101 t. 7. 1936; Tard. et C. Chr. in Fl. Gen. Ind. **7:** 372. fig. 44 (1). 1941.

Aspidium Scallani Christ in Bull. Soc. Bot. Ital. **1901**: 296.

Dryopteris Scallani C. Chr. Ind. Fil. 291. 1905; in Acta Hort. Gotheb. **1**: 55. 1924.

Rhizome short, erect or oblique, densely radicose; *fronds* caespitose, stipe 6-12 cm long, dark stramineous, basal part moderately scaly and densely setose hairy, *scales* brown, lanceolate, setose, *hairs* gray, needle-like, long and unicellular; lamina usually 12-20 cm long or longer, 7-10 cm broad, subdeltoid-oblong, acuminate, base not or sometimes slightly narrowed, simply pinnate under the pinnatifid apical part; *pinnae* about 10 pairs, oblique, rather close, the lower several pairs free and distinctly petiolate, the upper ones becoming more and more adnate upwards, the basal pair as long as the upper next ones and almost horizontally patent, or sometimes considerably shortened, the middle ones 4-5 cm long, generally 6-8 mm, or rarely broader, lanceolate, acute or subacuminate, base equal, truncate or rounded, pinnatisect about half way or less down into about 10 pairs of deltoid-ovate, oblique entire *lobes; texture* thickly herbaceous, dry brownish or blackish-green, rachis, costa and costules below copiously clothed in long spreading gray needle-like hairs, quite glabrous above except the tomentose costa; *veins* in lobes 4 pairs, oblique and curved, the anterior basal one runs to the sinus, the posterior basal one to the margin some way above the sinus, setose hairy underneath; *sori* oblong, straight, 1-2 pairs in each lobe along the lower veins, sporangia provided with 4 erect needle-like hairs.

A very distinct endemic species inhabiting deep ravines by stream side under forests in the Provinces of Szechuan (Mt. Omei), Kweichow, Yunnan, Kwangsi, Hunan, Kiangsi (Lu-shan), Chekiang, and southern part of Anwhei, at elevations of 400-550 m. Also Tonkin, Indo-China.

Plate 229. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation and sori (× 4). 3. Scale from the base of stipe (× 30). 4. Hairs from the lower part of stipe (× 60). 5–6. Sporangium with spores (× 100).

3

1

2

5

6

4

第 229 圖　峨眉茯蕨

Plate 229. LEPTOGRAMMA SCALLANI (Christ) Ching

第 二 百 三 十 圖

尾葉茯蕨(金星蕨科)

LEPTOGRAMMA CAUDATA Ching

根狀莖斜出或爲短匍匐狀; 葉簇生於生長頂端, 柄細弱, 全體被有適量的剛毛, 但無鱗片, 長 5—10 厘米, 葉體長三角狀披針形, 向頂部爲長漸尖頭, 長 10—16 厘米, 戟狀, 基部以上寬 3—5 厘米, 一回羽狀, 上半部爲深羽裂; 分離羽片 3—5 對, 無柄, 向上各對逐漸愈來愈多的合生, 基部一對羽片常最長, 長 4—2 厘米, 寬 1 厘米, 闊披針形, 水平開展或略向下, 頂端急尖或亞鈍頭, 基部不等, 卽下方斜切, 上方亞截形, 邊緣淺羽裂爲 6—4 對的斜出鈍三角形的全緣裂片, 基部以上的羽片遠較短, 接近, 斜開展, 和基部一對同形, 但羽裂較淺, 基部多少合生, 亞圓形或亞截形, 上下相等, 頂端鈍頭或急尖頭; 葉爲草質, 上下兩面被適量剛毛, 邊緣有睫毛; 葉脈在裂片通常 3 對, 不分叉, 分離, 都達於葉邊, 小肋彎曲; 子囊羣線形, 沿生於下部的脈上, 有剛毛, 因子囊頂部有 4—5 根直立針狀剛毛所致。

產地:福建福州及台灣阿里山特產。

本種是本屬各種中最特出的一種, 不同於其他各種的特徵爲其小而狹長的葉, 基部有一對特長的水平開展羽片, 全形如戟。

圖註: 1. 本種全形 (自然大)。 2. 中部羽片, 表示葉脈及子囊羣 (放大 3 倍)。 3. 葉柄上的剛毛 (放大 30 倍)。 4—5. 孢子囊及孢子 (放大 100 倍)。

PLATE 230

LEPTOGRAMMA CAUDATA Ching

THELYPTERIDACEÆ

LEPTOGRAMMA CAUDATA Ching in Sinensia **7:** 98 t. 4. 1936.

Dryopteris africana Hayata, Ic. Pl. Form. **4**: 187 t. 124, A–B. 1914 (non C. Chr. Ind. Fil. 1905).

Rhizome oblique, or short-creeping; *fronds* fasciculate at the growing apex of the rhizome, stipe gracile, stramineous, moderately hirsute throughout, 5-10 cm long, lamina elongate, deltoid-lanceolate, gradually long-acuminate, 10-16 cm long, 3-5 cm broad above the hastate base, simply pinnate below the broad and deeply pinnatifid upper half; *free pinnae* 3-5 pairs, sessile, the upper ones become more and more adnate as they go upwards, the basal pair of pinnae generally much the longest, 4-2 cm long, 1 cm broad, broadly lanceolate, acute, horizontally patent or somewhat deflexed, apex acute or obtusish, base unequal, i.e. the lower side cut oblique, the upper side as broad as the upper part, pinnatifid less than half way down into 6-4 oblique, deltoid, obtuse entire lobes; *pinnae* above the basal pair half as long, patent or oblique-patent, more or less adnate, of similar shape as the basal ones, less deeply lobato-incised, close, base roundish or subtruncate, equal, apex obtuse or acute; *texture* herbaceous, moderately hirsute on both sides, margin ciliate; *veins* in lobes usually 3-jugate, simple, free from flexuose costule, the basal pair of the contiguous groups reach the leaf margin a little way above the sinus; *sori* linear along the lower veins of each group, hirsute due to the presence near the top of the sporangia of some upright pale-colored needle-like unicellular hairs.

Fukien: Foochow, Lukiang, *F. P. Metcalf 5002C* (type), August 10, 1926. Taiwan: Mt. Arisan, *Hayata* et *Sasaki,* January 1912; *Faurie 529,* June, 1914.

A peculiarly distinct species, different from all other known species of the genus in the narrowly elongate fronds with much produced basal pair of pinnae.

Plate 230. 1. Habit sketch (natural size). 2. A middle pinna, showing venation and sori (× 3). 3. Hairs from the stipe (× 30). 4–5. Sporangium with spores (× 100).

第 230 圖　尾葉茯蕨

Plate 230. LEPTOGRAMMA CAUDATA Ching

第 二 百 三 十 一 圖

波葉溪邊蕨(金星蕨科)

STEGNOGRAMMA CYRTOMIOIDES (C. Chr.) Ching

根狀莖斜出或爲短匍匐狀；葉簇生於生長頂端，柄細軟，暗禾稈色，長 8—14 厘米，基部有疏鱗片和剛毛混生，鱗片卵狀披針形，漸尖頭，暗棕色，有剛毛附生，剛毛淡灰色，針形，開展，由多個細胞組成，柄上部及中軸全部也有同樣剛毛，葉體長 14—24 厘米，寬 4—5 厘米，闊披針形，漸尖頭，向基部略變狹，一回羽狀，頂部爲深羽裂；羽片 7—10 對，多少合生，惟下面幾對分離，無柄，比中部的略短，中部羽片爲卵狀披針形，長 2.5—4 厘米，基部寬 1.3—1.5 厘米，圓形或截形，急尖頭或短漸尖頭，基部一對羽片較短，長不及 2 厘米，長圓卵形，開展或略向下，上部的羽片開展，爲頗狹的缺刻分開，邊緣亞全緣或者通常爲波狀圓齒形；葉爲粗草質，乾後爲淡黃綠或淡褐色，在上下兩面沿中肋，葉脈及小脈有適量的短剛毛；側脈 8—10 對，明顯，亞開展，小脈羽狀，4—3 對，斜向上方，稍彎弓，其中通常只基部一對頂端交結，在中肋兩旁成一三角形的網眼，頂部延伸小脈向外達於淺缺刻；子囊羣線形，沿生於下面幾對小脈上，而基部一對較上方各對爲長，有剛毛，因子囊羣均有 5—6 根針狀硬毛生於頂部及子囊柄上也有剛毛所致。

分佈：四川西南部（峨嵋山），貴州（梵淨山）及雲南北部，爲本區特有種，生於海拔 1000—2400 米的雜木林下溝中，在形體上頗似貫衆的小羽片變型（*Cyrtomium Fortunei* J. Sm. f. *polypteron* (Diels) Ching）。

圖註：1. 本種全形（自然大）。 2. 中部的羽片，表示葉脈，邊緣及子囊羣（放大 3 倍）。 3. 葉柄基部的鱗片（放大 40 倍）。 4. 葉柄上的針狀剛毛（放大 30 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 231

STEGNOGRAMMA CYRTOMIOIDES (C. Chr.) Ching

THELYPTERIDACEÆ

STEGNOGRAMMA CYRTOMIOIDES (C. Chr.) Ching in Sinensia **7:** 95 t. 3. 1936.

Dryopteris stegnogramma var. *cyrtomioides* C. Chr. in Acta Hort. Gotheb. **1**: 56. 1924.

Rhizome oblique or short-creeping; *fronds* caespitose at the growing apex of the rhizome, stipe slender, 8-14 cm long, dark stramineous, the basal part is both sparsely scaly and hirsute, *scales* dark brown, ovate-lanceolate, acuminate and setose, *hairs* pale-colored, needle-like, spreading, multicellular, the upper part of stipe and the entire rachis are similarly hirsute, lamina 14-24 cm long, 4-5 cm broad, broadly lanceolate, acuminate, slightly narrowed towards the base, simply pinnate under the deeply pinnatifid apical part; *pinnae* 7-10 pairs, more or less adnate, only several lower pairs free and sessile, slightly shorter than the middle ones, which are 2.5-4 cm long, 1.3-1.5 cm broad at the broader round-truncate base, ovate-lanceolate, acute or short-acuminate, the lowest pair less than 2 cm long, oblong-ovate, patent or often somewhat deflexed, the upper ones patent, separated by rather narrow sinuses, margin subentire or more often undulate-crenate; *texture* thickly herbaceous, flavo-greenish, or blackish, both sides moderately and shortly hirsute on costa, veins and veinlets; *lateral veins* 8-10-jugate, distinct, subpatent, pinnate; veinlets 4-3 pairs, obliquely ascending, slightly curved, of which usually only the basal pair of opposite groups united into a triangular mesh along each side of the costa with excurrent veinlet running towards the margin as the upper veinlets; *sori* linear, along the lower several veinlets of each group, of which the lowest are much longer than those above, densely hirsute due to the setose sporangia.

Szechuan: Ta-shiang-ling, *Harry Smith 13499, 10069, 2104* (type), in thickets, alt. 2400 m.; Mt. Omei, *W. P. Fang 3007,* in thickets, alt. 1000-1100 m. Kweichow: Yinkiang, Van-ching Shan, *Y. Tsiang 7953,* Dec. 30, 1930; *A. N. Steward 687;* Kwei-yang, *Bodinier 2765* (1899); Tsin-gay, *Bodinier 2100.* Yunnan: Pai-pin-tien, *E. E. Maire* (1916), alt. 400 m.

This distinct species is endemic in West China. In habit, it resembles *Cyrtomium Fortunei* J. Sm. f. *polypteron* (Diels) Ching from the same region.

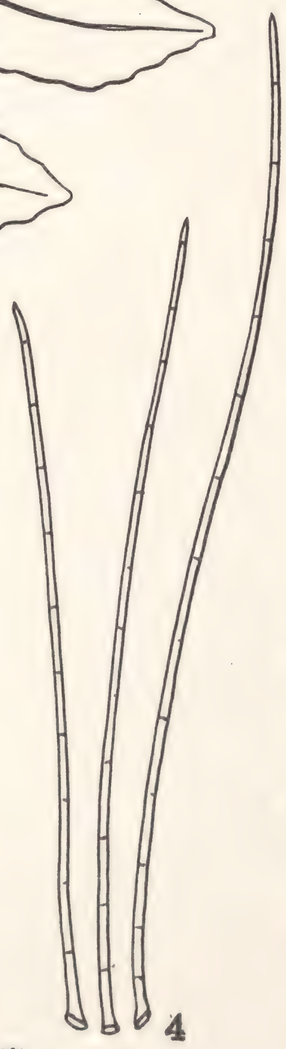
Plate 231. 1. Habit sketch (natural size). 2. One middle pinna, showing venation, margin and sori (× 3). 3. Scale from the base of stipe (× 40). 4. Hairs from the stipe (× 30). 5–6. Sporangium with spores (× 100).

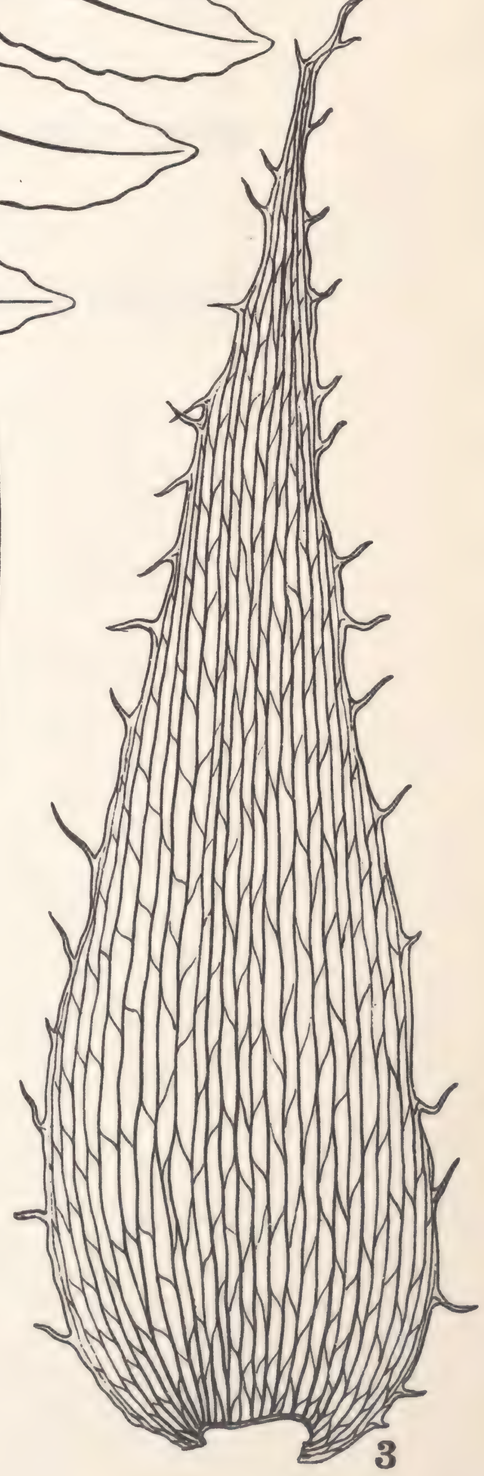
2

1

5

6


4


3

第 231 圖　波葉溪邊蕨

Plate 231. STEGNOGRAMMA CYRTOMIOIDES (C. Chr.) Ching

第 二 百 三 十 二 圖

淺 裂 溪 邊 蕨（金 星 蕨 科）

STEGNOGRAMMA ASPLENIOIDES J. Smith

根狀莖斜出向上或短匍匐狀，爲老的葉柄基部所覆蓋；葉簇生，柄長 20 厘米，或過之，暗禾稈色，下部有頗多的鱗片和開展的灰白色針狀剛毛混生，鱗片爲披針形，暗棕色，有剛毛附生，向上部亞光滑或有剛毛疏生，葉體長 40 厘米或過之，寬約 12 厘米，長圓披針形，漸尖頭，向基部幾不變狹，在羽狀深裂的頂部下面爲一回羽狀；羽片約爲 10 對，其中下部 5—8 對分離而無柄，上部的多少合生，開展，彼此爲較寬的缺刻所分開，互生，長 5—7 厘米或較長，基部一對略短或和上面的羽片同長，寬 1.4—2 厘米，闊披針形，略爲短漸尖頭，基部上下方都略爲斜切，亞圓形，羽狀淺裂到 1/3 深處或更淺一些，成爲 10—13 對的闊圓形的斜向小裂片，上方的羽片邊緣只爲圓齒狀的淺裂；葉質粗糙，乾後爲黝綠色，中軸及上下兩面都有針狀剛毛；葉脈在每一小裂片爲 4—6 對，單脈，斜向上方，稍彎弓，下面 2 對或有時只一對頂端結合，並有延伸頂脈直達缺刻；子囊羣線形沿生於脈上，也稍爲彎弓，下面一對頂端通常也結合，無蓋，孢子囊頂部經常有 4 根或較多的上向針狀單細胞剛毛；孢子兩面形，長圓，有密細刺狀突起。

分佈：四川西部（大相嶺）及雲南西北部，向西經北緬甸至印度北部，生於海拔 2400 米以上的次生雜木林溝內。

本種爲本區內特有種，過去曾錯誤地被認爲和南洋羣島的 *Stegnogramma aspidioides* Bl. 爲同一種，作者曾加以研究，指出兩種的差別（參閱 Sinensia 7 卷 94 頁 1936 年）。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，表示葉脈及子囊羣（放大 3 倍）。 3. 葉柄基部的鱗片（放大 40 倍）。 4. 葉柄上的剛毛（放大 40 倍）。 5—6、孢子囊及孢子（放大 100 倍）。

PLATE 232

STEGNOGRAMMA ASPLENIOIDES J. Smith

THELYPTERIDACEÆ

STEGNOGRAMMA ASPLENIOIDES J. Smith apud Ching, Gen. Stegn. and Lept. in Sinensia **7:** 94 t. 2. 1936.

Gymnogramma aspidioides Hook. Sp. Fil. **5**: 150. 1864; Hook. & Bak. Syn. Fil. 378. 1867; Clarke in Trans. Linn. Soc. II. Bot. **1**: 569. 1880 (pro parte).

Dryopteris stegnogramma C. Chr. Ind. Fil. 294. 1905 (pro parte).

Dryopteris stegnogramma var. *asplenioides* C. Chr. in Acta Hort. Gotheb. **1**: 56. 1924.

Rhizome obliquely ascending or short-creeping, densely clothed in the old basal parts of the stipes of previous years; *fronds* fasciculate, stipe 20 cm or longer, dark stramineous, copiously clothed in the lower part in both dark brown lanceolate setose *scales* and the spreading needle-like long gray *hairs,* almost subglabrous or sparsely hirsute upwards, lamina 40 cm or longer, about 12 cm broad, oblong-lanceolate, acuminate, hardly narrowed towards the base, simply pinnate under the pinnatifid apical part; *pinnae* about 10 pairs, of which the lower 5-8 pairs free and sessile, the upper ones slightly adnate, patent, alternate, separated by rather broad sinuses, 5-7 cm long, or longer, the basal ones not or slightly shortened, 1.4-2 cm broad, broad-lanceolate, rather short-acuminate, base equally oblique, roundish, pinnatisect about one-third way or less down into 10-13 pairs of broad, rounded, oblique lobes, the upper pinnae only lobato-crenate; *texture* thickly herbaceous, opaque green, hairy along the rachis and on both sides of pinnae with needle-like hairs; *veins* in lobes 4-6 pairs, simple, obliquely ascending and curved, the lower 2 pairs (or sometimes only 1 pair) of the opposite groups jointed below the sinus with excurrent veinlets running straight to the sinus; *sori* linear, curved along several pairs of lower veins with the lowest pair often jointed or even run up a short way along the excurrent veinlet, sporangia setose with 4 or more erect needle-like long unicellular hairs.

Szechuan: Ta-shiang-ling, *Harry Smith 2116,* in thickets, alt. 2400 m. Yunnan: Kong-shan Hsien, Chonmutong, *K. M. Feng 7578,* alt. 2300 m., common; Yang-pie Hsien, *R. C. Ching 22483,* in thickets.

Khasia: *Griffith* (type); *Hooker et Thomson,* 5-6000 ft. alt. Assam: Shillong Wood, *C. B. Clarke 37345,* February, 1885.

This species is very different from the Javanese *S. aspidioides* Bl. in many essential characters as was already pointed out by me long ago (l.c.). From that species it can be easily distinguished by much larger size, much longer and pinnatisect or lobato-crenate pinnae, generally 2 pairs of anastomosed veins and by the costa below provided with spreading needle-like long hairs.

Plate 232. 1. Habit sketch (natural size). 2. Portion of pinna, showing venation and sori (× 3). 3. Scale from the basal part of stipe (× 40). 4. Hairs from stipe (× 40). 5–6. Sporangium with spores (× 100).

第 232 圖　淺裂溪邊蕨

Plate 232. STEGNOGRAMMA ASPLENIOIDES J. Smith

第 二 百 三 十 三 圖

圓 頂 耳 蕨（三 叉 蕨 科）

POLYSTICHUM DIELSII Christ

根狀莖短而直立，有密的根叢，同葉柄一起，有暗棕色披針形漸尖頭的鱗片密覆，邊有鋸齒，長達 5 毫米；葉多數簇生，葉柄長 5—7 厘米，棕禾稈色，具密鱗片，葉體長 15—25 厘米，寬 2 厘米，線狀披針形，漸尖頭，向基部極少變狹，一回羽狀；羽片多數(40—60 對)，櫛比狀瓦覆排列，幾成直角開展，長約 1 厘米，寬 5 毫米，幾無小柄，亞長方圓形，基部極不等，下邊切成直線，基部上方截形，並有一個急尖頭三角形耳片和中軸平行，上邊緣爲波狀，向圓頭有幾個短而開展的尖鋸齒，基部 1—2 對羽片略小，並多少下向；葉爲草質，乾後淡棕色，兩面光滑，但中軸有鱗片疏生；葉脈分叉，而基部上方一脈爲羽狀；子囊羣小，大都生於羽片的上半邊，5—7 個，邊內生，下邊缺如或只有 1—2 個生於頂端下，囊羣蓋灰色，最後脫落。

產地：貴州平番縣，卡弗雷里（*Cavalerie*）號碼 892，3712；桐梓縣，蔣英號碼 5176。

本種爲一明顯的地方種，形體頗似鋸齒耳蕨（*Polystichum hecatopterum* Diels），但羽片爲圓鈍頭，不具長刺形的鋸齒，下部羽片不爲強度下向，故易區別。本種也近於對生耳蕨（*P. deltodon* (Bak.) Diels），但羽片較多，較密，爲櫛比狀瓦覆排列，頂端爲圓鈍，也易於區別。

圖註：1. 本種全形（自然大）。　2. 羽片，表示葉脈及子囊羣位置（放大 4 倍）。　3. 葉柄基部的鱗片（放大 20 倍）。　4—5. 孢子囊及孢子（放大 100 倍）。

PLATE 233

POLYSTICHUM DIELSII Christ

ASPIDIACEÆ

POLYSTICHUM DIELSII Christ in Bull. Acad. Géogr. Bot. Mans **16:** 238. 1906; C. Chr. Ind. Fil. Suppl. I. 64. 1912.

Hemesteum Dielsii Léveillé Fl. Kouy-tscheou 497. 1915.

Polystichum hecatopterum C. Chr. in Bull. Acad. Géogr. Bot. Mans. **14**: 114. 1904 (non Diels).

Rhizome short, erect, densely radicose and together with stipes clothed in dense dark brown, lanceolate, acuminate, dentate *scales* over 5 mm long; *fronds* caespitose, 6-12 together, stipe 5-7 cm long, rufostramineous, copiously clothed in the similar but smaller scales than those at the base, lamina 15-25 cm long, 2 cm broad, linear-lanceolate, acuminate, hardly narrowed downward, pinnate; *pinnae* numerous (40-60-jugate), pectinately imbricate, recto-patent, about 1 cm long, 5 mm broad, subsessile, subrectangular-oblong, base strongly unequal, cut straight below, truncate above with an acute deltoid auricle parallel to the rachis, upper margin crenate, but with several sharp, short, spreading teeth towards the rounded apex, the lowest 1-2 pairs of pinnae slightly smaller and more or less deflexed; *texture* herbaceous, dry brownish, both sides glabrous except the sparsely scaly rachis; *veins* forked but the anterior basal one pinnate; *sori* small, mostly confined to the upper half of the pinnae, 5-7 and intramarginal, none or 1-2 on the lower side below the apex, indusiate, indusium peltate, gray, fallen off at last.

Kweichow: Pin-fa, *Cavalerie 892* (type), *3712,* on limestone cliff; Houang tsa-pa, *Cavalerie 7061, 7647* (pro parte); Ta-ny, *Esquirol 3579;* Tungtze, Y. *Tsiang 5176* (typical).

A very distinct local species with a habit more like *P. hecatopterum* Diels (see Ching, Ic. Fil. Sin. **1:** t. 12. 1930) than any other related species of the group of *P. deltodon* (Bak.) Diels, but differs in the margin of the pinnae having only a few shorter spiny teeth towards the obtuse apex below which the upper margin is undulate or crenate and in the less deflexed lower pinnae. From *P. deltodon* (Bak.) Diels (see Ching, l.c. t. 11.), our fern differs in having numerous, pectinately imbricate pinnae with obtuse apex provided with a few longer teeth.

Plate 233. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 4). 3. Scale from the base of stipe (× 20). 4–5. Sporangium with spores (× 100).

第 233 圖　圓頂耳蕨

Plate 233. POLYSTICHUM DIELSII Christ

第 二 百 三 十 四 圖

尖 頂 耳 蕨 (三 叉 蕨 科)

POLYSTICHUM EXCELLENS Ching

根狀莖短而直立，有密的根叢，同葉柄一起，有紅棕色狹卵狀披針形的鱗片密生，邊具粗睫毛；葉多數簇生，葉柄長 7—12 厘米，淡禾稈色，上部鱗片疏生，葉體長 20—25 厘米，寬 3.2—4 厘米，線披針形，漸尖頭，向基部不變狹，一回羽狀：羽片 20—28 對，有小柄，櫛比狀排列，斜出開展，向頂部逐漸縮小，但基部羽片不縮小，長 2 厘米，基部寬 6 毫米，亞鐮刀狀的斜方披針形，頂端爲短頭，具一微突頭，基部不等，下邊切成直線形，基部上方爲斜截形，並具一小三角耳形突起，有一刺尖頭，上邊緣有波狀短齒：葉爲紙質，乾後爲淡綠色，中軸及下面有小鱗片疏生；側脈約有 8 對，分叉，或基部上方一脈爲羽狀，兩面不顯明，子囊羣中位，上邊有 6—8 個，下邊 4—6 個，頂生於每羣脈的上方一短小脈；囊羣蓋大而圓，邊緣有不規則的鋸齒，最後脫落。

產地：雲南東南部，屏邊縣，大圍山，馮國楣號碼 5173（模式標本），生林下石灰岩上，常見。貴州，精城，青龍山，鄧世偉 90379；中國科學院植物所生態組號碼 2001，海拔 1150 米；定番，卡弗雷里（*Cavalerie*）號碼 741，4172（部分）。

本種爲西南山區特有種，但過去常被與圓頂耳蕨（*Polystichum Dielsii* Christ）和平番耳蕨（*Polystichum pinfaense* Christ）混同一起，其實本種與前二種相似而很不相同，應成爲一個獨立之種。

圖註：1. 本種全形（自然大）。 2. 羽片，表示葉脈及子囊羣位置（放大 4 倍）。 3. 葉柄基部的鱗片（放大 20 倍）。 4. 囊羣蓋（放大 20 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 234

POLYSTICHUM EXCELLENS Ching

ASPIDIACEÆ

POLYSTICHUM EXCELLENS Ching, sp. nov.

Species gregis *Polystichi Dielsii* Christ, lamina multo latiora, pinnis lateralibus longioribus, apice acutis, marginibus usque ad apicem leviter crenatis, sori supra costam plerumque 6-8, infra costam 4-6 insigniter diversa.

Rhizome short, erect, densely radicose and together with stipes densely clothed with rufo-brown narrowly ovate-lanceolate-fimbriate *scales; fronds* caespitose, often numerous together, stipe 7-12 cm long, pale stramineous, sparsely scaly upward, lamina 20-25 cm long, 3.2-4 cm broad, linear-lanceolate, acuminate, not narrowed towards base, pinnate; *pinnae* 20-28 pairs, petiolulate, pectinate, obliquely patent, gradually abbreviate towards apex, the basal ones not shortened, 2 cm long, 6 mm broad at the base, subfalcately rhombic-lanceolate, apex acute, mucronate, base uneqal, cut straight below, obliquely truncate above and with a low small deltoid mucronate auricle, margin undulato-crenate with a few low teeth; *texture* chartaceous, dry pale green, rachis and also the under side sparsely scaly; *lateral veins* about 8 pairs, forked, or pinnate in the anterior base, indistinct; *sori* medial, 6-8 above the costa, 4-6 below, terminal on the anterior veinlet of each group, indusium gray, margin lacerate, fallen off at last.

Southeastern Yunnan: Ping-pien Hsien, Ta-wei Shan, *K. M. Feng 5173* (type), *5170,* Oct. 26, 1954, on limestone cliff under forest, common; Mengtze, *Hancock 19* (pro parte). Kweichow: Tsing-chen, Tsing-lung Shan, *Tang Shi-wei 90397,* May 30, 1936; Ecological Survey Party of the Bot. Inst., Academia Sinica *No. 2001,* Oct. 18, 1956, alt. 1150 m.; Pin-fa, *Cavalerie 741,* 4172 (pro parte).

There has been a great confusion even by Christ himself as to the identity of *Polystichum Dielsii* Christ, *P. hecatopterum* Diels and *P. pinfaense* Christ. The distinction between the first two species has already been noted in the previous page, while the distinction between *P. pinfaense* Christ and our new species chiefly lies in the former having much narrower fronds (about 2 cm broad with smaller deltoid pinnae, 1 cm long, 5 mm broad at the base, margin with a few low teeth) and the sori confined mainly to the upper side of the costa, and usually none or only 1-2 below the costa.

Plate 234. 1. Habit sketch (natural size). 2. Pinna, showing venation and position of sori (× 4). 3. Scale from the base of stipe (× 20). 4. Indusium (× 20). 5–6. Sporangium with spores (× 100).

第 234 圖　尖頂耳蕨

Plate 234. POLYSTICHUM EXCELLENS Ching

第 二 百 三 十 五 圖

倒 葉 耳 蕨 (三 叉 蕨 科)

POLYSTICHUM YUANUM Ching

根狀莖短而直立，有密的根叢，同葉柄一起，被暗棕色闊卵形漸尖頭的鱗片，邊緣下半部全緣，上半部略具疏鋸齒；葉簇生，葉柄長 7—9 厘米，禾稈色，鱗片稀疏或上部幾光滑，葉體長 10—30 厘米，寬 3 厘米，線披針形，漸尖頭，向基部漸變狹，一回羽狀；羽片 25—30 對，互生，彼此被寬缺刻分開，強度下向，向下部逐漸縮小，基部一對長寬各約 5 毫米，三角形，中部羽片長 1—1.2 厘米，基部寬 6—7 毫米，斜方三角形，基部不等，下方切去，幾成直線，基部上方爲切形，並有一個小急尖耳形突起，頂端具一短刺頭，上邊緣有短鋸齒疏生；葉爲紙質，乾後變淡棕色，中軸及上下兩面頗光滑；葉脈下面明顯，上面隱約難辨，分叉，惟基部上方一脈爲羽狀，基部下方一脈爲單脈；子囊羣小，中位，頂生於每羣葉脈的上方一短小脈，限於羽片的外半部，上方 3—5 個，下方 1—3 個，有囊羣蓋。

產地：雲南西北部，中甸縣，俞德浚號碼 11286，生石面，海拔 2200 米，1937 年 5 月 2 日。

本種形體頗似芽胞耳蕨 (*Polystichum stenophyllum* Christ)，但葉端下部從不生芽胞，羽片爲亞斜方形，強度下向，基部上方耳形突起不發達，彼此分離較遠，頂端僅有一個短微尖頭，下面光滑，不具緊貼葉面的鱗片，故易區別。

圖註：1. 本種全形 (自然大)。 2. 羽片，表示葉脈及子囊羣位置 (放大 4 倍)。 3. 葉柄基部的鱗片 (放大 30 倍)。 4—5. 孢子囊及孢子 (放大 100 倍)。

PLATE 235

POLYSTICHUM YUANUM Ching

ASPIDIACEÆ

POLYSTICHUM YUANUM Ching, sp. nov.

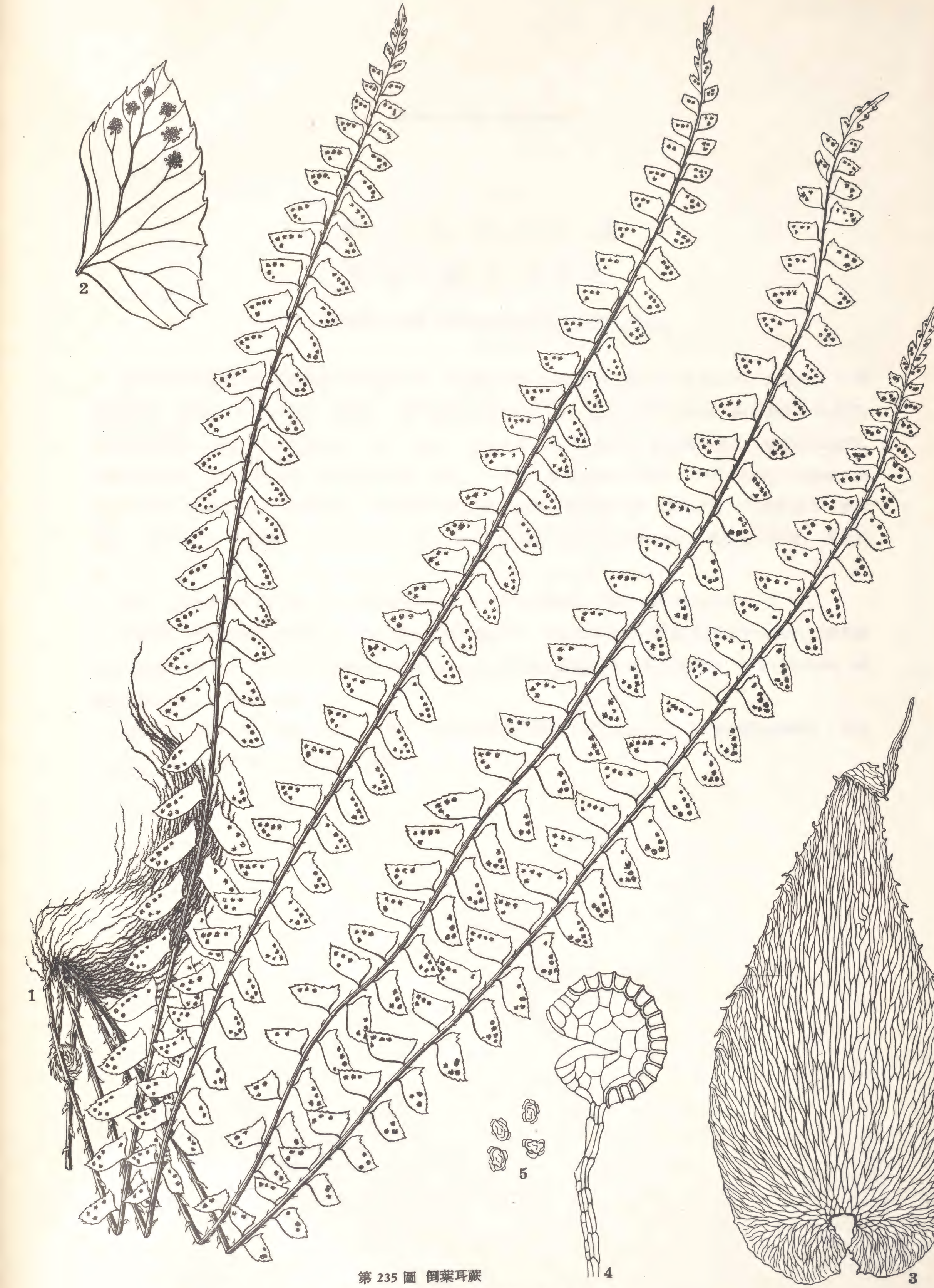
Species gregis *Polystichi stenophylli* Christ, differt fronde apice haud gemmifera radicanteque, pinnis subrhomboidis, valde deflexis, basi anteriore paulo auriculatis, nec pectinato-confertis sed spatio sat lato sese separatis, facie inferne subglabra et apice solomondo brevissime mucronatis.

Rhizome short, erect, densely radicose and together with stipe sparsely clothed in dark brown, broadly ovate, acuminate, denticulate *scales; fronds* caespitose, stipe 7-9 cm long, stramineous, sparsely scaly or subglabrous upward, lamina 20-30 cm long, 3 cm broad, linear-lanceolate, acuminate, gradually narrowed downward, pinnate; *pinnae* 25-30 pairs, alternate, separated by a broad sinus from each other, strongly deflexed, lower ones gradually abbreviated, the lowest pair about 5 mm each way, triangular, the middle ones 1-1.2 cm long, 6-7 mm broad at the base, rhomboid-triangular, base unequal, cut straight below, truncate above with a small acute and mucronate auricle, margin crenato-serrate with short teeth; *texture* chartaceous, dry brownish, rachis and both sides quite glabrous; *veins* visible below, obscure above, forked except the anterior basal one which is pinnate, while the posterior basal one is simple; *sori* small, medial, terminal on the anterior veinlet of each group and generally confined to the outer part, 3-5 above and 1-3 below the costa, indusiate.

Northwestern Yunnan: Chungtien Hsien, Chiren, *T. T. Yü 11286,* on rock surface, alt. 2200 m., May 1st, 1937.

A very distinct species of the group of *P. deltod*on (Baker) Diels, especially related to *P. stenophyllum* Christ, from which it differs in characters diagnosed above.

Plate 235. 1. Habit sketch (natural size). 2. Pinna, showing venation and position of sori (× 4). 3. Scale from the base of stipe (× 30). 4–5. Sporangium with spores (× 100).



第 235 圖 倒葉耳蕨

Plate 235. POLYSTICHUM YUANUM Ching

第 二 百 三 十 六 圖

廣 東 耳 蕨 (三 叉 蕨 科)

POLYSTICHUM KWANGTUNGENSE Ching

根狀莖短而直立，有密的根叢，同葉柄一起，有暗棕色寬披針形的鱗片疏生， 邊有睫毛； 葉簇生， 10 或更多成叢，葉柄長 10—12 厘米， 禾稈色， 鱗片疏生，葉體長 20—30 厘米，寬 2.5 厘米， 線披針形，漸尖頭，向基部略變狹，一回羽狀，羽葉 30—35 對， 接近， 向下反曲， 長 1.2 厘米， 基部寬 6 毫米， 亞長方長圓形，下邊切成直線，上基部爲截形，且幾不呈耳形，僅有一小尖角，近基部的羽片較小，長約 1 厘米，上邊緣爲波狀淺齒，向頂端亞鈍頭具一短細尖頭；葉爲紙質，乾後淡棕綠色，兩面頗光滑；葉脈分叉，但基部上方一脈爲羽狀， 兩面明顯； 子囊羣小， 通常上邊有 8 個， 下邊在頂部以下有 2—3 個或缺如； 囊羣蓋大而圓， 久則脫落。

產地：廣東北部，乳源縣，生於西雲寺旁的大石上。高錫朋號碼 53790， 1933 年 11 月 21 日。

本種爲一個相當獨特的蕨種， 不易與其他相近之種混淆； 與本種接近的一種當爲雲南西北部的倒葉耳蕨 (*Polystichum Yuanum* Ching)，但其葉柄上的鱗片較狹， 羽片彼此緊接， 爲亞長方長圓形，頂端爲亞鈍頭， 邊緣爲波狀淺齒，故易與雲南種區別。

圖註：1. 本種全形 (自然大)。 2. 羽片，表示葉脈及子囊羣 (放大 4 倍)。 3. 葉柄基部的鱗片 (放大 40 倍)。 4—5. 孢子囊及孢子 (放大 100 倍)。

PLATE 236

POLYSTICHUM KWANGTUNGENSE Ching

ASPIDIACEÆ

POLYSTICHUM KWANGTUNGENSE Ching, sp. nov.

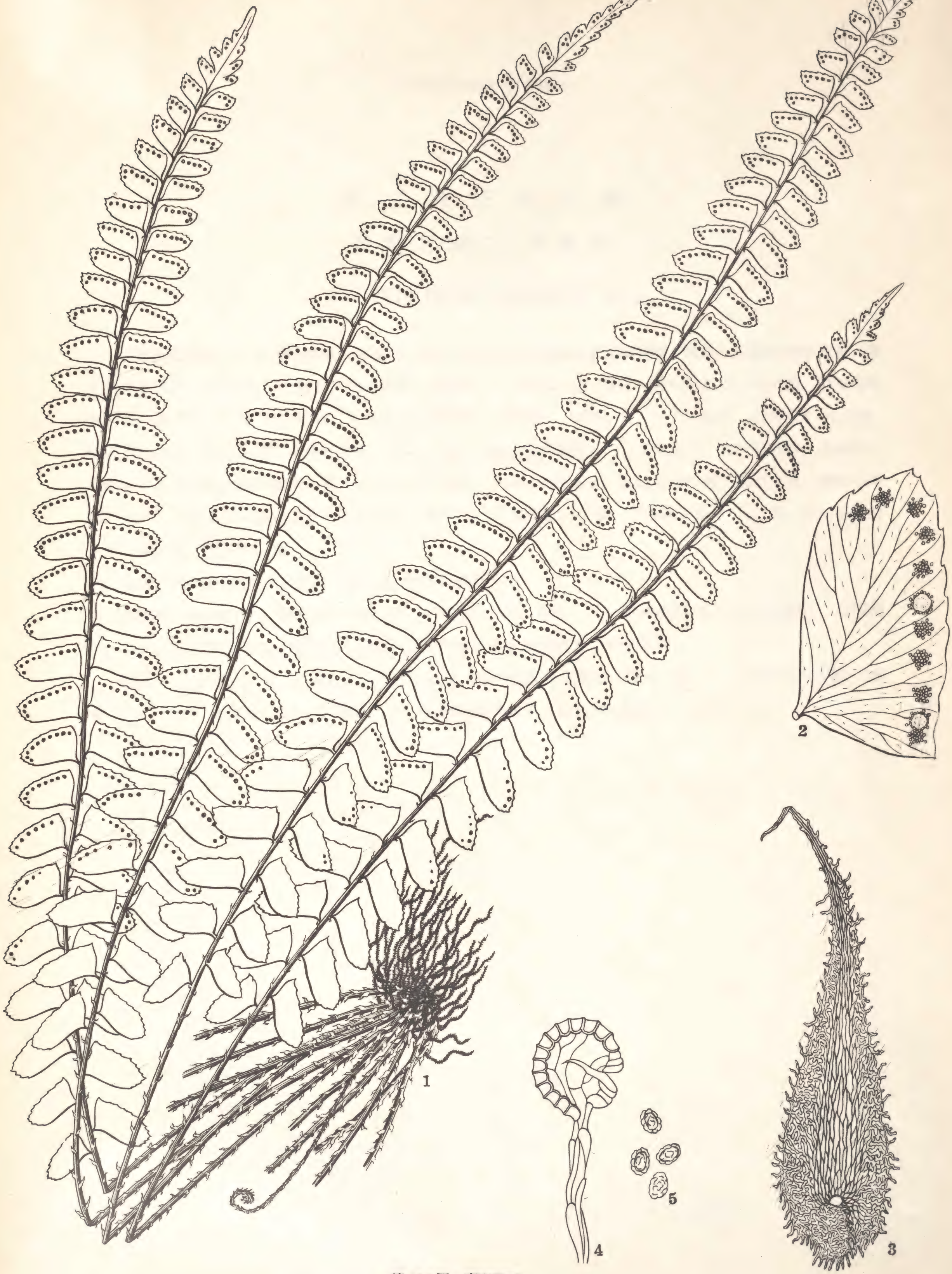
Species *Polysticho Yuani* Ching affinis, differt squamis rhizomatis stipitisque angustioribus, pinnis confertis, subrectangulari-oblongis, marginibus crenatis, apice obtusis.

Rhizome short, erect, densely radicose, together with stipes sparsely clothed in dark brown, broadly lanceolate, fimbriate *scales; fronds* caespitose, 10 or more together, stipe 10-12 cm long, stramineous, sparsely scaly, lamina 20-30 cm long, 2.5 cm broad, linear-lanceolate, acuminate, slightly narrowed towards the base, pinnate; *pinnae* 30-35 pairs, confert, deflexed, 1.2 cm long, 6 mm broad at the base, subrectangular-oblong, cut straight below, truncate above and hardly auricled with an acute apex, the lowest ones smaller, about 1 cm long, margin undulato-crenate with a few short mucronate teeth towards the obtuse apex; *texture* chartaceous, dry brownish-green, quite glabrous; *veins* forked, but pinnate in the anterior basal group, visible on both sides; *sori* small, generally 8 above, 2-3 below towards the apex, indusiate.

Northern Kwangtung: Chu-yuan Hsien, on the large rock by the Sieh Yuan Temple, *S. H. Ko 53790,* Nov. 21, 1933.

A very unique species not easily confounded with the related species by its subrectangular-oblong, deflexed and crenate pinnae with obtuse apex. South China is poor in the species of *Polystichum,* chiefly because of the mountains there being as a rule not high enough to provide suitable environments for the genus. The discovery of the present species there is quite interesting floristically.

Plate 236. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 4). 3. Scale from the base of stipe (× 40). 4–5. Sporangium with spores (× 100).



第 236 圖　廣東耳蕨

Plate 236. POLYSTICHUM KWANGTUNGENSE Ching

第二百三十七圖

刺葉耳蕨(三叉蕨科)

POLYSTICHUM CONSIMILE Ching

根狀莖短而直立，有密的根叢，同葉柄一樣，起初有深棕色卵形漸尖頭的鱗片疏生，後變成幾乎光滑；葉多數簇生成叢，柄長 10—12 厘米，灰禾稈色，葉體 20—28 厘米，寬 3 厘米，線狀披針形，漸尖頭，向基部略變狹，一回羽狀；羽片 30—35 對，篦齒形的瓦覆排列，有小柄，向下反曲，長 1.5 厘米，基部寬 7—8 毫米，亞斜方三角形，短急尖頭，或略爲鈍頭，基部不等，下邊切成直線形，上方內邊截形，且略呈耳形，邊緣疏生尖鋸齒，有長刺頭，最下的羽片略小，長不及 1 厘米，下向；葉爲草質，乾後呈深棕色，兩面光滑；葉脈不明顯，分叉，基部上方一脈爲羽狀；子囊羣小，邊內生，上邊約有 7—9 個，下邊在頂端下 1—3 個，生於每脈的上方小脈頂端，囊羣蓋全緣。

產地：四川東南部，碚陵縣，鷄子洞，侯學煜號碼 495。

本種爲一明顯的種，屬於對生耳蕨（*P. deltodon* (Bak.) Diels）組，葉柄基部以上光滑無鱗片，葉體細長，草質，羽片向下反曲，篦齒狀瓦覆排列，並有疏生的長刺頭鋸齒，故易區別。

圖註：1. 本種全形（自然大）。 2. 羽片全形，表示葉脈及子囊羣（放大 4 倍）。 3. 葉柄基部鱗片（放大 40 倍）。 4. 囊羣蓋（放大 20 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 237

POLYSTICHUM CONSIMILE Ching

ASPIDIACEÆ

POLYSTICHUM CONSIMILE Ching, sp. nov.

Species configuratione *Polystichi hecatopteridi* Diels proxime similis, differt stipitibus rachibusque squamis ovatis ab initio sparsis demun subevanescentibus conspersis, pinnis omnibus lateralibus deflexo-recurvatis, latioribus, basi anteriore paulo auriculatis, marginibus dentibus aristatis sparsis et brevioribus praeditis.

Rhizome short, erect, densely radicose, together with stipes at first sparsely clothed in dark-brown, ovate, acuminate *scales,* later become nearly naked; *fronds* caespitose, many together, stipe 10-12 cm long, of a dead-stramineous color, lamina 20-28 cm long, 3 cm broad, linear-lanceolate, acuminate, base slightly narrowed, pinnate; *pinnae* 30-35 pairs, pectinately imbricate, petiolulate, deflexo-recurvate, 1.5 cm long, 7-8 mm broad at the base, subrhombic-triangular, apex short-acute or bluntish, base unequal, cut straight below, truncate above and slightly auricled, margin sparsely aristate-serrate with long spreading spines, the lowest pinnae smaller, less than 1 cm long, deflexed; *texture* herbaceous, dry dark brown, glabrous on both sides; *veins* indistinct, forked, but the anterior basal one pinnate; *sori* small, intramarginal, about 7-9 on the upper side, 1-3 on the lower side below the apex, terminating anterior forking of each lateral vein, indusium entire.

Southeastern Szechuan: Pei-ling Hsien, Pé-gou-pu, Gi-tze-tung, *Hou Shou-Yu 495.*

A distinct species of the group of *P. deltodon* (Bak.) Diels with elongate glabrous fronds above the base of the stipe, of a herbaceous texture and the deflexly recurvate, pectinately imbricate pinnae with remote long spiny teeth.

Plate 237. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 4). 3. Scale from the base of stipe (× 40). 4. Indusium (× 20). 5–6. Sporangium with spores (× 100).

第 237 圖　刺葉耳蕨

Plate 237. POLYSTICHUM CONSIMILE Ching

第 二 百 三 十 八 圖

芽胞耳蕨(三叉蕨科)

POLYSTICHUM STENOPHYLLUM Christ

根狀莖短而直立，有密的根叢，同葉柄一樣，有紅棕色寬卵形尾尖頭的鱗片，邊緣有睫毛；葉多數簇生，葉柄長 8—10 厘米，棕禾稈色，具同樣的宿存鱗片，與一些棕色披針形的鑽狀鱗片混生一起，葉端下約 4 厘米處有一棕色芽胞，能着地生根並發生幼株，一回羽狀；羽片 40—50 對，篦齒狀的瓦覆排列，有短柄，下部一些羽片向下反曲並略縮小，中部的羽片長 1.6 厘米，基部寬 7 毫米，三角形，有粗刺狀的急尖頭，基部下邊爲圓楔形，上方內邊爲截形，且具一大三角形的刺尖頭耳形，葉邊多少反捲，亞全緣而且有少數短硬的倒伏尖鋸齒；葉爲革質，乾後爲棕色，中軸有鱗片，下面有緊貼疏生的披針狀鱗片，尤以幼時爲多；葉脈緊密，分叉，但在基部上方爲羽狀，下面明顯而凹陷，上面不明顯；子囊羣小，位於葉邊與中肋之間，生於每組葉脈的上方一小脈，囊羣蓋圓形，全緣，最後脫落。

分佈：四川西南部，湖北西部，雲南西北部及台灣高山常見，生於海拔 2500—3300 米。日本的高山，北緬甸及印度的錫金也有分佈。

本種爲一極明顯的種，最初發現於四川西南部寶興縣，在我國西南高山針葉森林帶甚爲普通，向西經北緬甸達於印度北部，在這裏本種似常與 *Polystichum Atkinsoni* Bedd. 同生；台灣和日本標本與中國的模式無異，僅有時較小而已。

圖註：1. 本種全形（自然大）。 2—3. 二個羽片，表示葉脈，子囊羣和葉脈上的鱗片（放大 4 倍）。 4. 葉柄基部的鱗片（放大 10 倍）。 5. 孢子囊及孢子（放大 100 倍）。

PLATE 238

POLYSTICHUM STENOPHYLLUM Christ

ASPIDIACEÆ

POLYSTICHUM STENOPHYLLUM Christ in Bull. Soc. Bot. France **52:** Mém. I. 27. 1905; C. Chr. Ind. Fil. 587. 1905; in Contr. U. S. Nat. Herb. **26:** 284 t. 16. 1931.

Aspidium caespitosum Wall. var. *stenophyllum* Franch. MSS.

Polystichum Levingei Hope. in herb.; Christ in Bull. Acad. Géogr. Bot. Mans. **10**: 260. 1902 (nom. nud.).

Polystichum deversum Christ in Bot. Gaz. **51**: 353. 1911; C. Chr. Ind. Fil. Suppl. I. 65. 1912; Hand.-Mzt. Symb. Sin. **6**: 26. 1929.

Polystichum pseudo-Maximowiczii Hayata, Ic. Pl. Form. **5**: 234. 1915; Ogata, Ic. Fil. Jap. **7**: t. 340. 1936.

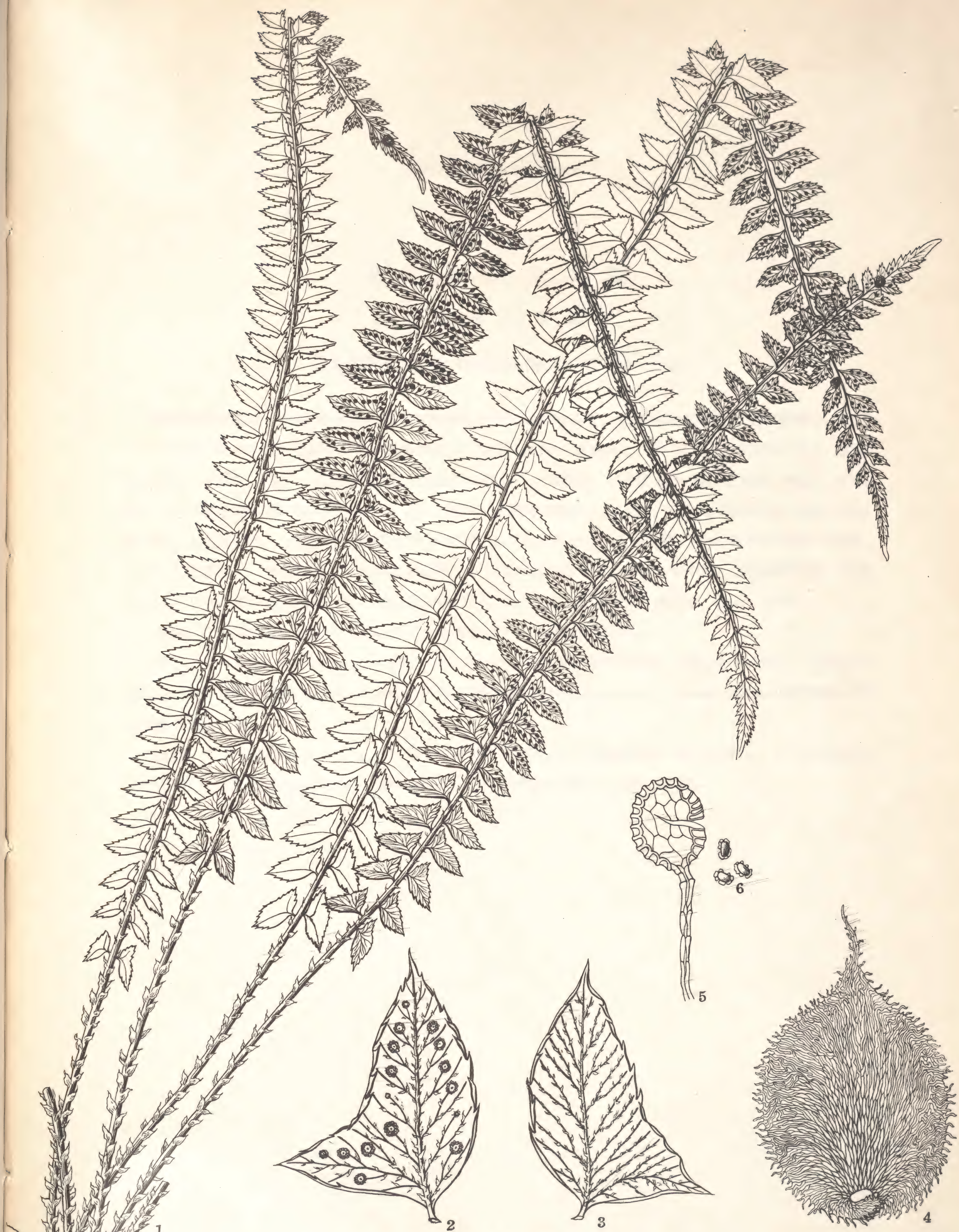
Rhizome short, erect, densely radicose, together with the stipe densely clothed in rufo-brown broadly ovate, caudate and fimbriate *scales; fronds* caespitose, stipe 8-10 cm long, rufo-stramineous, clothed in similar and persistent scales intermixed with some lanceolate-subulate ones of a brown color, lamina 30-35 cm long, 2-3 cm broad, linear-lanceolate, gemmiferous and often radicant at about 4 cm below the apex, pinnate; *pinnae* 40-50 pairs, pectinately imbricate, subsessile, lower ones deflexed and slightly abbreviated, the middle ones 1.6 cm long, 7 mm broad at the base, triangular, aristately acute, base roundly cuneate below, and truncate above with a large deltoid aculeate-aristate auricle, margin repand, subentire with a few low stout decumbent teeth; *texture* coriaceous, dry brown, rachis scaly, under side with sparse, lanceolate appressed scales especially in the young state; *veins* confert, forked, but pinnate in the auricle, distinctly impressed below, obscure above; *sori* small, medial between the margin and costa, terminating the anterior veinlet of each group, indusium round, entire, fallen off at last.

Szechuan: Moupin, *David* (type), 1870; *E. H. Wilson 5404; W. P. Fang 6303, 1577*, May 27, 1930; *Scallan; Faber*. Hupeh: Fang Hsien, *E. H. Wilson 2625* (type of *P. deversum* Christ). Yunnan: Hokin, Ma-eul-shan, *Delavay,* May 1, 1890; Mekong, *H. Handel-Mazzetti 9754;* Pin-tscheoan, *Ducloux 156, 5414;* Weisih, Sih-lung Shan, *K. M. Feng 4811,* alt. 2600-2800 m., on rocks under forest; *C. W. Wang 46037, 68698,* alt. 3600 m.; Chungtien, Chiao Tou, *K. M. Feng 3158,* alt. 2700 m.; Atuntze, *K. M. Feng 5497,* common, alt. 2900-3300 m., July 16, 1940; Tachiming Valley, *J. F. Rock 8629,* on shaded bank in bamboo forest. Tibet: Yatung, *H. E. Hobson* (1899). Taiwan: Mt. Arisan, common at 2500 m. altitude.

Also Japan and Sikkim: *J. D. Hooker* (1857) pro parte; Phuloot, *H. Levinge,* Oct. 15, 1880.

A very distinct and common fern in the wooded mountains in Southwestern China, westwardly to Upper Burma and Sikkim, where the species seems often to grow together with *Polystichum Atkinsoni* Bedd. The plant from Taiwan as figured by Ogata is typical of the species. The Japanese plant proves essentially the same, except smaller, the same form being also seen from West China.

Plate 238. 1. Habit sketch (natural size). 2–3. Pinnae, showing venation, sori and scales on veins (× 4). 4. Scale from the base of stipe (× 10). 5. Sporangium with spores (× 100).



第 238 圖　芽胞耳蕨

Plate 238. POLYSTICHUM STENOPHYLLUM Christ

第 二 百 三 十 九 圖

粗 齒 耳 蕨（三 叉 蕨 科）

POLYSTICHUM GROSSIDENTATUM Ching

根狀莖短而直立，有密的根叢，頂端有暗棕色卵狀長漸尖的鱗片，具齧蝕狀的邊緣；葉多數簇生，柄長 8—14 厘米，灰禾稈色，僅有少數同樣的鱗片疏生，其餘的光滑，葉體長 25—30 厘米，中部寬 2.5 厘米，基部寬 3 厘米，線狀披針形，向尾狀頂部漸狹，向基部不變狹，一回羽狀；羽片約爲 40 對，有短柄，開展，近生，而向下部被寬缺刻分開，基部幾對較大，長 1.5 厘米，基部寬 1 厘米，三角形，急尖而具短尖頭，基部下方切成直線，上方爲截形，上邊緣及頂端以下有不規則的粗大三角形齒牙，具短尖頭，中部的羽片長約 1.2 厘米，由此向上逐漸縮小；葉爲紙質，乾後爲淡棕綠色，中軸及兩面均爲光滑；葉脈下面明顯，上面隱約不清，在基部上方爲羽狀，在大齒牙內爲三叉，向上端小齒牙爲二叉或單脈；子囊羣大，邊內生，接近，有蓋。

產地：四川東南部，酉陽縣，銅鼓潭，接近貴州邊界，侯學煜號碼 825。

本種爲對生耳蕨（*Polystichum deltodon*（Bak.）Diels）組的另一個特出的種，有三角形的羽片，具粗大牙齒和向尾狀葉端逐漸變狹的葉體。本種的形體頗似琉球羣島產的 *Polystichum yaeyamense* Makino 但遠較大，而且葉端爲漸狹尾狀，

圖註：1. 本種全形（自然大）。 2. 基部的羽片，表示葉脈及子囊羣位置（放大 4 倍）。 3. 中部的羽片（放大 4 倍）。 4. 葉柄基部的鱗片（放大 40 倍）。 5. 子囊羣及孢子（放大 100 倍）。

PLATE 239

POLYSTICHUM GROSSIDENTATUM Ching

ASPIDIACEÆ

POLYSTICHUM GROSSIDENTATUM Ching, sp. nov.

Species distinctissima ab omnibus affinibus adhuc cognitae in China differt frondis apicem versus gradatim in cauda lineari longe attenuatis, pinnis lateralibus trigonis, marginibus superioribus grosse et irregulariter dentatis.

Rhizome short, erect, densely radicose, crowned at the apex with dense, dark brown, ovate, long-acuminate *scales* having erosed margin; *fronds* caespitose, many together, stipe 8-14 cm long, gray-stramineous, subglabrous with a few similar scales above the base, otherwise the entire plant glabrous, lamina 25-30 cm long, 2.5 cm broad at the middle, 3 cm broad at the base, linear-lanceolate, gradually long-attenuate towards the caudate apex, base not narrowed, pinnate; *pinnae* about 40 pairs, petiolulate, patent, the lower ones separated by broad sinuses, the basal pair slightly larger than those above, 1.5 cm long, 1 cm broad at the base, triangular, mucronately acute, base cut straight below, truncate above, the upper and the outer margins coarsely and irregularly dentate with mucronate apex, the middle pinnae smaller, about 1.2 cm long, and thence gradually diminish upward; *texture* chartaceous, dry brownish green, rachis and both sides glabrous; *veins* distinctly raised below, obscure above, pinnate in the anterior base, triforked in the larger teeth, forked or simple in the upper smaller teeth; *sori* large, intramarginal, contiguous, indusiate.

Southeastern Szechuan, You-yang Hsien, Tung-koo-tant, on the border of Kweichow, *Hou Shou Yu 825.*

This is one of the most distinct species of the group of *P. deltodon* (Baker) Diels by possessing triangular pinnae with coarsely and irregularly dentate margin and the gradually long-attenuate caudate apex of the fronds. In general habit, our new species resembles *Polystichum yaeyamense* Makino from the Liukiu Islands (see Ogata, Ic. Fil. Jap. **7:** t. 343. 1936), but differs in much larger size and caudate fronds.

Plate 239. 1. Habit sketch (natural size). 2. Basal pinna, showing venation and position of sori (× 4). 3. Middle pinna (× 4). 4. Scale from the base of stipe (× 40). 5. Sporangium with spores (× 100).

第 239 圖　粗齒耳蕨

Plate 239. POLYSTICHUM GROSSIDENTATUM Ching

第 二 百 四 十 圖

亮葉耳蕨(三叉蕨科)

POLYSTICHUM LANCEOLATUM (Baker) Diels

根狀莖短而直立，有密的根叢，頂端有深棕色小卵形漸尖頭的鱗片密生；葉簇生，開展，或生在石灰岩上常成蓮座狀葉叢，並以根系深入到石縫中，柄短，長 1—3 厘米，棕禾稈色，有疏鱗片，葉體一般長 5—8 厘米，寬 8—12 毫米，線狀披針形，漸尖頭或往往爲亞鈍頭，向基部爲不顯著的變狹，一回羽狀；羽片 7—20 對，篦齒狀或者緊接，有小柄，開展，亞四方形至斜方形，長 3—5 毫米，寬 2—4 毫米，下邊全緣，切成直線，上邊及外邊有幾個較大的三角的鋸齒具張開的長硬刺頭，有刺痛之感，基部上方不呈耳形；葉爲亞革質，兩面光滑，有光澤，尤以上面爲顯著，乾後棕色或淡棕綠色；葉脈少數而稀疏，兩面明顯，單脈，僅基部上方的 1—2 脈爲分叉，達於鋸齒；子囊羣小，少數，中肋上邊 2—3 個，上中位，下邊缺如，囊羣蓋大，圓形，全緣，不久脫落。

分佈：湖北西部，四川西南部（峨嵋山），貴州及湖南西部；廣西可能也有。生石灰岩上，海拔 900—1600 米。

本種是對生耳蕨（*Polystichum deltodon* (Baker) Diels）組的最小的一種，爲西南石灰岩地區的特有旱生種，形體變異極大，因此，過去有幾個不同的名詞，如 *Polystichum nanum* Christ，是本種生於乾旱生境下的極端生態小型的代表。

圖註：1. 本種全形（自然大）。 2. 羽片，表示葉脈及子囊羣位置（放大 10 倍）。 3—4. 葉柄基部的鱗片（放大 50 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 240

POLYSTICHUM LANCEOLATUM (Baker) Diels

ASPIDIACEÆ

POLYSTICHUM LANCEOLATUM (Baker) Diels in Engl. Jahrb. **29:** 193. 1900; C. Chr. Ind. Fil. 583. 1905.

Aspidium lanceolatum Baker in Gard. Chron. n. s. **14**: 494. 1880.

Polystichum parvulum Christ in Bull. Acad. Géogr. Bot. Mans **14**: 114. cum fig. 1904.

Polystichum nanum Christ in Bull. Acad. Géogr. Bot. Mans **16**: 238. 1906.

Rhizome short, erect, very densely radicose, densely clothed at the apex with dark brown, ovate acuminate, small *scales; fronds* tufted, numerous together, often forming a rosette on dry rocks with roots penetrating deep into the crevices, stipe short, 1-3 cm long, rufo-stramineous, sparsely scaly, lamina generally 5-8 cm long, 8-12 mm broad, linear-lanceolate, acuminate or often obtusish at apex, hardly narrowed towards the base, pinnate; *pinnae* 7-20 pairs, pectinate or confert, petiolulate, patent, subquadrangular to rhombic, 3-5 mm long, 2-4 mm broad, entire and straight on the lower side, the upper and outer margins provided with a few relatively large, deltoid, spreading long-spiny and pungent teeth, anterior base hardly auricled; *texture* subcoriaceous, both sides glabrous and lustrous especially on the upper side, dry brown or brownish-green; *veins* few, simple except the anterior basal 1 or 2 which are forked, quite distinct on both sides; *sori* small, few, 2-3 on the upperside of the costa, supra-medial, indusium large, round, entire, soon falling off.

Western Hupeh: Ichang Gorge, *Maries* (type); Ko-chen Hsien, *H. C. Chow 4067*, Oct. 20, 1935. Szechuan: Mt. Omei, on the way to Chou-lou-tung from Han-chen-ping, *R. C. Ching 168, 170,* on dry limestone cliff, alt. 900-1600 m.; *S. C. Chen 30045; E. H. Wilson 5384;* Pie-tan-ng-tze, *S. C. Chen 30094.* Kweichow: Tsin-gay, *Cavalerie 1234* (type of *P. parvulum* Christ); Gan-chow, *Bodinier 312, 3797, 4152;* Pin-fa, *Cavalerie 1945* (type of *P. nanum* Christ), Nov. 2; Yunfan-shan, Tuyun, *Y. Tsiang 5953,* on moist limestone cliff, July 20, 1930. Hunan: Yung-sai Hsien, Ecological Survey Party of Bot. Inst., Academia Sinica *No. 586,* on limestone cliff, Aug. 18, 1953.

A very distinct small xerophytic fern endemic in the limestone region. *P. parvulum* Christ proves the same, while *P. nanum* Christ represents a still smaller form with fronds to 4 cm long, 9 mm broad, consisting of only 6-7 pairs of subimbricating pinnae, 4 mm long, 3.5 mm broad with a few spreading long spiny teeth.

One of the smallest species of the genus, not easily confounded with any other species except the less divided form of *P. Martinii* Christ, which differs, however, in the larger size and at least lobato-incised pinnae with free anterior auricle. It often grows in the crevices of limestone cliff with little moisture from the rain, where the plant becomes stunted and spreads out in a rosette.

Plate 240. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 10). 3–4. Scales from the base of stipe (× 50). 5–6. Sporangium with spores (× 100).

第 240 圖　兎葉耳蕨

Plate 240. POLYSTICHUM LANCEOLATUM (Baker) Diels

第 二 百 四 十 一 圖

尾 葉 耳 蕨 (三 叉 蕨 科)

POLYSTICHUM THOMSONI (Hooker fil.) Beddome

根狀莖短而直立，有根叢；葉簇生，柄長 3—5 厘米，深禾稈色，鱗片甚多，尤以基部爲甚，紅棕色，卵狀長圓形，漸尖頭，邊爲疏流蘇狀，向上部變爲線狀披針形或爲纖維狀，葉體爲線狀披針形，長 7—20 厘米，寬 2—3 厘米，向上逐漸變狹，頂端爲線狀尾形，向基部通常稍變狹，深二回羽裂或者二回羽狀；羽片多數，開展，均勻排列，長 1—1.5 厘米，基部寬 5—6 毫米，亞斜方三角形，急尖頭，基部不等或在下部羽片爲亞不等，下邊爲楔形，上方內邊爲斜切，並有大而特出的銳裂耳片，羽狀半裂到沿中肋兩側的狹翅，成爲 4—5 對斜出的全緣或銳裂的線披針形並向內彎的漸尖裂片；葉爲草質或堅草質，乾後爲淡黃綠色；中軸及中肋下面有纖維狀鱗片疏生；葉脈在耳片爲羽狀，在其他裂片爲分叉；子囊羣小，在中肋兩側有 3—5 個，在耳片 2—3 個，中生，位於每脈的上方短小脈之頂，囊羣蓋大，膜質，邊有圓波狀齒，頗宿存。

分佈：本種爲亞高山種，廣佈於雲南西北部及四川西南部（峨嵋山）山地，海拔 1500—2800 米，生針葉林下石縫中。在喜馬拉雅山區 2000—2800 米處也極爲常見。

本種爲一秀麗喜陰的蕨種，其特點爲線狀披針形葉體，向上逐漸變狹，頂端有一長尾頭，葉爲草質，故易與相近之種區別。

圖註：1. 本種全形（自然大）。　2. 羽片，表示葉脈及子囊羣位置（放大 4 倍）。　3. 葉柄基部的鱗片（放大 20 倍）。　4—5. 孢子囊及孢子（放大 100 倍）。

PLATE 241

POLYSTICHUM THOMSONI (Hooker fil.) Beddome

ASPIDIACEÆ

POLYSTICHUM THOMSONI (Hooker fil.) Beddome, Ferns Brit. Ind. t. 126. 1866; Handb. Ferns Brit. Ind. 206. 1883; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1:** iv. 191. 1899; C. Chr. Ind. Fil. 588. 1905; Christ in Bot. Gaz. **51:** 348. 1911; Hand.-Mzt. Symb. Sin. **6:** 28. 1929.

Aspidium Thomsoni Hook. fil. in Hooker, 2nd. Cent. Ferns t. 25. 1860 (pro parte); Hook. & Bak. Syn. Fil. 251. 1864 (pro parte); Clarke, Ferns N. Ind. in Trans. Linn. Soc. II. Bot. **1**: 508. 1880.

Dryopteris Thomsoni O. Ktze. Rev. Gen. Pl. **2**: 813. 1891.

Rhizome short, erect, radicose; *fronds* fasciculate, stipe 3-5 cm long, dark stramineous, copiously scaly especially near the base, *scales* rufo-brown, ovate-oblong, acuminate, sparsely fimbriate, becoming linear-lanceolate or fibrillose upward, lamina linear-lanceolate, 7-12 cm long, 2-3 cm broad, gradually long-attenuate and ended in a long linear cauda towards apex, not or usually only slightly narrowed towards the base, deeply bipinnatifid or subbipinnate; *pinnae* numerous, patent, regularly spaced, 1-1.5 cm long, 5-6 mm broad at the base, subrhombic-triangular, acute, base unequal or subequal in the lower pinnae, cuneate below, the upper side oblique with enlarged incised auricle, pinnatifid down to a narrow wing along the costa into 4-5 pairs of oblique, entire or cleft, lanceolate-acuminate, incurved segments; *texture* herbaceous or firmly so, rachis copiously and costa underneath sparsely fibrillose, dry brownish-green; *veins* pinnate in the auricle, forked in segments; *sori* small, 3-5 on each side of costa, 2-3 in the auricle, medial, terminal on short anterior veinlets, indusium large, membranaceous, crenate, quite persistent.

Yunnan: N. E. of Atuntze, *G. Forrest 20171*, Sept. 1921; Yung-peh mountains, *G. Forrest 15319;* Weisih, Mekong-Salwin Divide, *K. M. Feng 4475* on shaded rocks, alt. 2100 m.; Likiang, Yulung Shan, *H. Handel-Mazzetti 3587;* Young-pie Hsien, Lee-tze-ping, *R. C. Ching 22422;* Chen-kang Hsien, *C. W. Wang 72422* in rock crevices, alt. 2800 m.; Hokin, *R. C. Ching 23654* on shaded rocks. Szechuan: Mt. Omei, Sih-shiang-chu, *S. C. Chen 30114,* on stone wall, alt. 1500 m.; *E. H. Wilson 2607* (pro parte); *Faber* (pro parte).

N. India: The Himalayas, from Balti to Sikkim, alt. 2000-2800 m., very common.

A quite elegant and shade-loving fern, characterized by the long tail-like apex of the linear-lanceolate fronds and soft herbaceous texture.

Plate 241. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 4). 3. Scale from the base of stipe (× 20). 4–5. Sporangium with spores (× 100).

第 241 圖　尾葉耳蕨

Plate 241. POLYSTICHUM THOMSONI (Hooker fil.) Beddome

第 二 百·四 十 二 圖

鉗 形 耳 蕨（三 叉 蕨 科）

POLYSTICHUM BIFIDUM Ching

根狀莖短而直立，有密的根叢；葉簇生，柄長 13—15 厘米， 棕禾稈色， 頗光滑，基部有卵狀披針形漸尖頭的鱗片，葉體長 22—30 厘米，寬 4 厘米，闊披針形，漸尖頭，向基部不變狹， 一回羽狀； 羽片 30—40 對，接近，開展，長 2 厘米，基部以上寬 6 毫米，亞鐮刀形，急尖或亞急尖，有短尖頭，基部極不等，下邊爲楔形，上方內邊爲截形，並且大而突出的三角有銳鋸齒的耳片，上邊爲有規則地片狀銳裂到 ⅓—½ 深處，成爲 6—7 個通常有不等二裂的短尖頭裂片，下邊有 4—5 個較長的裂片，其中最下部二片爲全緣，裂片均向內彎成鐮刀形；葉爲草質，乾後爲綠色；每羽片的葉脈 7—8 對，基部上方一條爲羽狀，其他爲分叉，頂部及基部下方爲單脈，兩面明顯；子囊羣小，中生，每裂片有一個，但下部 4—5 片及上方耳片爲不育，位於每脈的上方短小脈頂端，囊羣蓋大而圓，全緣，不久脫落。

產地：雲南東南部，屏邊縣，大圍山，蔡希陶號碼 62760。生林下石上，海拔 1500 米。

本種爲雲南東南部特產， 形體頗似貴州產的馬氏耳蕨（*Polystichum Martinii* Christ），但較大，葉柄幾無鱗片，羽片較長較狹，鐮刀形，基部上方有較大的耳片，裂片大都爲二裂成鉗形，故易區別。

圖註：1. 本種全形（自然大）， 2. 羽片， 表示葉脈及子囊羣位置（放大 4 倍）， 3. 葉柄基部的鱗片（放大 30 倍）， 4—5. 孢子囊及孢子（放大 100 倍）。

PLATE 242

POLYSTICHUM BIFIDUM Ching

ASPIDIACEÆ

POLYSTICHUM BIFIDUM Ching, sp. nov.

Species gregis *Polystichi Martinii* Christ, differt majore, stipitibus squamis fere carentibus, pinnis lateralibus longioribus, augustioribusque, falcatis, basi anteriore auriculis majoribus, deltoideis rectis praeditis et segmentis pinnarum utraque costae latere plerumque bifidis.

Rhizome short, erect, densely radicose; *fronds* caespitose, stipe 13-15 cm long, stramineous-brown, quite glabrous except the base which is clothed with ovate-lanceolate, acuminate *scales,* lamina 22-30 cm long, 4 cm broad, broadly lanceolate, acuminate, not narrowed towards base, pinnate; *pinnae* 30-40 pairs, close, patent, 2 cm long, 6 mm broad above the base, subfalcate, apex acute, or acutish, mucronate, base very unequal, cuneate below, truncate above and provided with a prominent, deltoid, sharply serrate auricle regularly lobato-incised 1/3-1/2 down into 6-7 usually unequally bifid and mucronate segments on the upper side, 4-5 longer segments beneath, of which the lowest 2 entire and like the others incurved; *texture* herbaceous, dry green, glabrous; *veins* 7-8-jugate, the anterior basal one pinnate, the others forked, the uppermost and the posterior basal two simple, distinct below; *sori* small, medial, one to each segment except the lower 4-5 below, terminal on the anterior veinlet of each group, indusium large, round, entire, falling off soon.

Southeastern Yunnan: Ping-pien Hsien, *H. T. Tsai 62760,* July 18, 1934, on rocks in forest, alt. 1500 m.

Plate 242. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 4). 3. Scale from the base of stipe (× 30). 4–5. Sporangium with spores (× 100).

1

2

3

4

5

第 242 圖　鉗形耳蕨

Plate 242. POLYSTICHUM BIFIDUM Ching

第 二 百 四 十 三 圖

軟 骨 耳 蕨 (三 叉 蕨 科)

POLYSTICHUM NEPALENSE (Sprengel) C. Christensen

根狀莖短而直立，有密的根叢；葉多數簇生，柄長 12—15 厘米， 棕禾稈色， 近基部爲灰禾稈色，密被大而暗棕色或淡黑色有光澤的闊卵形漸尖頭厚鱗片， 飾以較淡的邊緣， 並混有紅棕色線狀鑽形的鱗片， 葉體長 25—30 厘米，寬 5—6 厘米，闊披針形，漸尖頭，向基部略變狹，一回羽狀；羽片約爲 25 對， 密接，有短柄，開展，長 2.5—3 厘米，近基部寬 8 毫米，亞鐮刀形， 短漸尖頭或急尖頭， 基部不等， 下方楔形，上方爲明顯的寬闊的急尖耳形，邊緣有雙重的軟骨質急尖鋸齒，無刺痛的感覺，基部的羽片較小，長不及 2 厘米，不反曲向下，而爲水平的開展；葉爲革質，乾後爲棕色，中軸有稀疏的暗棕色闊卵形的鱗片，與一些線形棕色鱗片混生，上面光滑，下面有伏貼在葉脈上的細鱗片，基部圓形，向上變成線狀尖頭；葉脈成羽狀，以銳角由中肋斜出，上面爲明顯的隆起，下面常爲凹陷；子囊羣大形，兩邊各一列，接近中肋，在耳片常爲二列，但在葉體爲二回羽裂的變型（f. **subbipinnata**)， 子囊羣在中肋兩邊常爲不規則的兩列， 生於每羣葉脈的上方一小脈的背部，囊羣蓋大，膜質，深灰色，邊有圓鋸齒，頗能宿存。

分佈：本種廣佈於雲南西部及西北部，海拔 2700—3000 米的亞高山及四川西南部（峨嵋山）， 海拔 1500 米，西藏東南部海拔3000 米，台灣，阿里山， 海拔 2300—2600 米。 印度， 緬甸北部（海拔 2300—2660 米）及菲列賓波洛克山（Mt. Pulog）（海拔 2700 米）也有分佈。

在葉的分裂度上，本種有時表現爲二回羽裂（f. *subbipinnata*).

圖註：1. 本種全形（自然大)。 2. 羽片， 表示葉脈及子囊羣位置（放大 3 倍)。 3. 葉柄基部的鱗片（放大 20 倍)。 4—5. 孢子囊及孢子（放大 100 倍)。 6. 二回羽裂變型的羽片（放大 3 倍)。

PLATE 243

POLYSTICHUM NEPALENSE (Sprengel) C. Christensen

ASPIDIACEÆ

POLYSTICHUM NEPALENSE (Sprengel) C. Christensen, Ind. Fil. 84. 1905. 585. 1906; in Contr. U. S. Nat. Herb. **26:** 284. 1931.

Aspidium nepalense Sprengel Syst. Veget. **4**: 97. 1827.

Aspidium marginatum Wall. List n. 366. 1828 (nom. nud.); Mett. Farngatt. Pheg. u. Asp. 39, n. 88. 1858; Hope in Journ. Bomb. Nat. Hist. Soc. **14**: 459 t. 17. 1902.

Polystichum marginatum Schott, Gen. Fil. ad t. 9. 1834.

Aspidium auriculatum Presl var. *marginatum* Hook. et Bak. Syn. Fil. 251. 1876.

Polystichum auriculatum var. *marginatum* Bedd. Ferns Brit. Ind. Suppl. t. 363. 1876; Handb. Ferns Brit. Ind. 204. 1883.

Aspidium auriculatum Don, Prodr. Fl. Nep. 3. 1825 (non Sw.).

Aspidium manmeiense Christ in Bull. Herb. Boiss. **6**: 765. 1898.

Polystichum atroviridissimum Hayata, Ic. Pl. Form. **4**: 190, f. 128. 1914.

Polystichum falcatipinnum Hayata, Ic. Pl. Form. **4**: 192 f. 130. 1914.

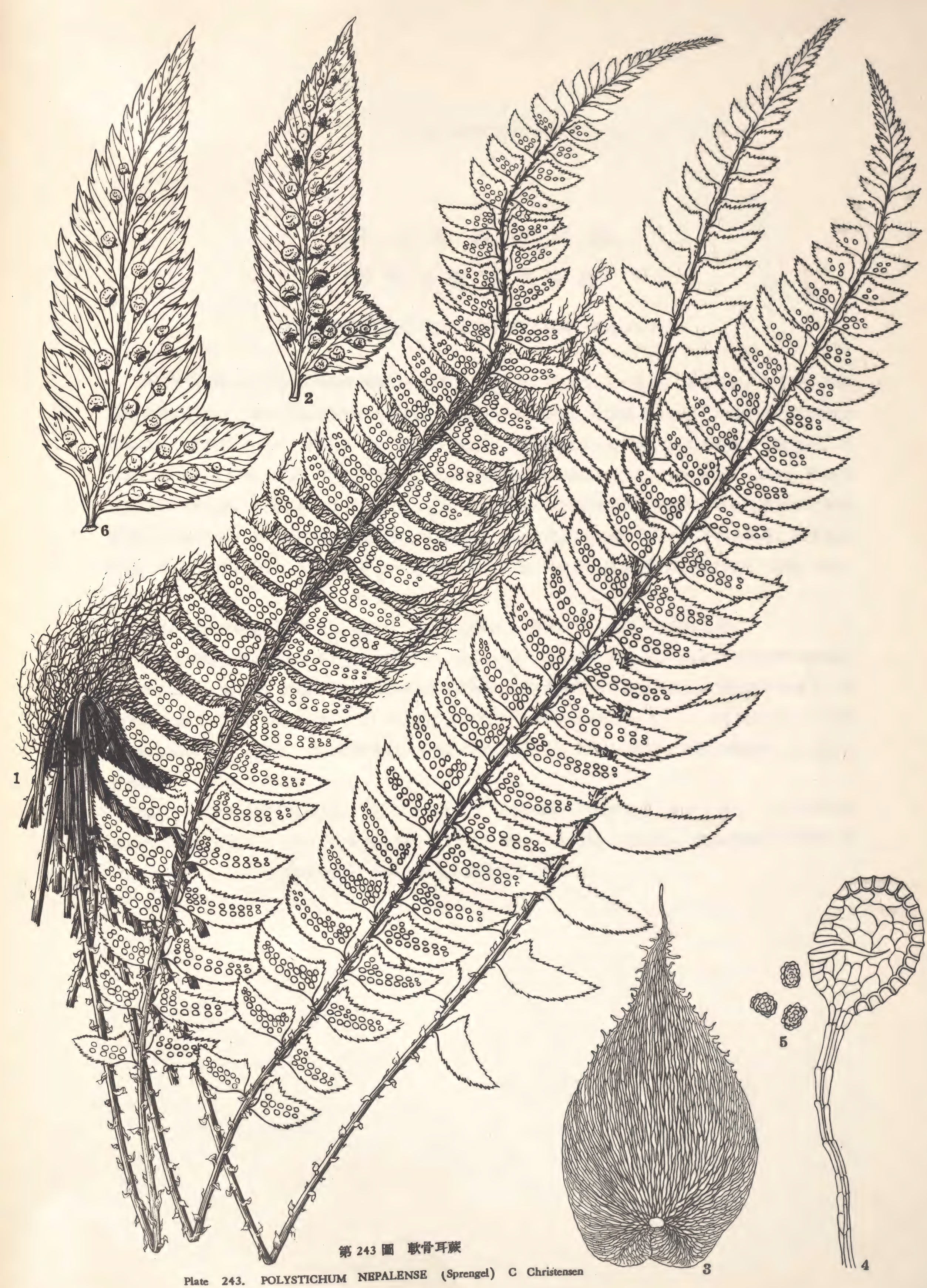
Rhizome short, thick, erect, densely radicose; *fronds* caespitose, many together, stipe 12-15 cm long, rufo-stramineous, or dead-stramineous near the base, densely clothed especially near the base in large, dark brown or blackish, shining broadly ovate-acuminate, thick *scales* often with lighter-colored margin, intermixed with rufo-brown linear-subulate scales; lamina 25-30 cm long, 5-6 cm broad, broadly lanceolate, acuminate, slightly narrowed towards the base, pinnate; *pinnae* about 25 pairs, close, patent, short-petiolate, 2.5-3 cm long, 8 mm broad near the base, subfalcate, short-acuminate or acute, base cuneate below, the upper with a distinct broad acute auricle, margin double-serrate with dense, white-callose, acute teeth which are not pungent to feeling, the basal pinnae smaller, less than 2 cm long, acute, not deflexed but horizontally patent; *texture* coriaceous, dry brown, rachis rather sparsely clothed in rufo-brown, large, ovate scales mixed with some brown linear ones, glabrous above, the under side copiously dotted on the veins with minute brown appressed scales with nearly orbicular base and long-cuspidate apex; *veins* in pinnate groups, slowly branching out from the costa under a sharp angle, distinctly raised above, visible and often impressed below; *sori* large in two costal rows and often an additional short row in the auricle (but in the *bipinnatifid* form, the sori often irregularly two-rowed on each side of costa), dorsal on the anterior veinlet of each group, indusium large, membranaceous, dark gray, margin crenate, quite persistent.

In China numerous specimens have been seen from Yunnan, S. W. Szechuan (Mt. Omei), Tibet (Yatung) and the Island Taiwan (Mt. Arisan) at elevations from 1500-3000 m. Also Northern India and the Philippines (Mt. Pulog, alt. 2750 m.).

A close relative of the Eurasian-American *Polystichum lonchitis* (L.) Roth and was considered as identical to each other by earlier botanists.

The degree of pinnation in a number of simply pinnate species of *Polystichum* of the group of *Lobatum* often varies considerably, as is examplified by the present and the following species, with which the present fern looks quite alike but differs in the large, broadly ovate dark brown shining scales on stipe mixed with brown fibrils and linear-subulate ones, in the biserrate, dense and white-callose teeth along the margin of the pinnae, the under side of which is copiously dotted with appressed orbicular-cuspidate minute scales and in the large costal sori with large brown membranaceous indusium.

Plate 243. 1. Habit sketch (natural). 2. Pinna, showing venation and sori (× 3). 3. Scale from the base of stipe (× 20). 4–5. Sporangium with spores (× 100). 6. Pinna of f. *subbipinnata* (C. Chr.) Ching (× 3).



第 243 圖　軟骨耳蕨

Plate 243. POLYSTICHUM NEPALENSE (Sprengel) C Christensen

第 二 百 四 十 四 圖

革葉耳蕨（三叉蕨科）

POLYSTICHUM XIPHOPHYLLUM (Baker) Diels

根狀莖短而直立，有宿存的老葉柄基部瓦覆蓋着；葉簇生，柄長 20—30 厘米，暗禾稈色，有密生的深棕色寬披針形厚鱗片，並夾入淺黑線狀鑽形的鱗片，飾以乾膜質的邊緣，脫落後留下由宿存的細疣狀基部所形成粗糙葉柄，葉體長 30 厘米，或更長一些，寬 10—15 厘米，長圓披針形，漸尖頭，基部不變狹，一回羽狀；羽片約爲 30 對，有短柄，開展，互生，下部的羽片爲同寬的缺口所分開，長 7.5—10 厘米，寬 1 厘米，亞鐮刀狀披針形，漸尖頭，基部不等，下方斜切，上方有一分離的或合生的卵形急尖頭的耳片，邊緣具有規則的鋸齒或爲波形淺裂片狀，具一硬尖頭；葉爲革質，頗有光澤，中肋有黑色鑽狀鱗片密生，上下兩面光滑，乾後爲淡棕色；葉脈不顯明，羽狀；子囊羣在中肋兩邊各爲一列，中生，但常爲不規則的兩列，囊羣蓋大，質硬，灰色，早落。

分佈：四川西南部（峨嵋山），東南部（南川，金佛山），貴州中部（貴陽）及雲南北部。

本種爲我國西南部的特有種，極近於大型的 *Polystichum otophorum* (Franch.), Bedd.，但除形體遠較高大外，羽片爲寬缺刻分開，緩漸尖頭，而更特別的是邊緣只有短尖頭的鋸齒，故易區別。在羽片的分裂度上，有（1）不裂的羽片變型 f. **integra,** （2）半裂的羽片變型 f. **subbipinnatifida** 及（3）一回羽狀的羽片變型 f. **bipinnata** 等三種變型，這是耳蕨屬的許多種的葉之分裂度不穩定的又一證明。在鑑定種類時，應特別注意此點。

圖註：1. 本種全形（自然大）。 2. 羽片（模式型）表示葉脈及子囊羣位置（放大 2 倍）。 3. 葉柄基部的鱗片（放大 20 倍）。 4—5. 孢子囊及孢子（放大 100 倍）。 6. 羽片（全緣型），表示葉脈及子囊羣位置（自然大）。 7. 羽片（二回羽葉型），表示葉脈及子囊羣位置（自然大）。

PLATE 244

POLYSTICHUM XIPHOPHYLLUM (Baker) Diels

ASPIDIACEÆ

POLYSTICHUM XIPHOPHYLLUM (Baker) Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1:** iv. 189. 1899; C. Chr. Ind. Fil. 589. 1905.

Aspidium xiphophyllum Baker in Journ. Bot. **1888**: 227.

Polystichum praelongatum Christ in Bull. Acad. Géogr. Bot. Mans **12**: 260. 1902; C. Chr. Ind. Fil. 586. 1905.

Rhizome short, thick, erect, imbricately covered with the persistent bases of old stipes; *fronds* fascicled, several together, stipe 20-30 cm long, dark stramineous, densely clothed in dark brown, firm, broadly lanceolate *scales* intermixed with blackish linear-subulate ones with scarious margin and, upon falling, leaving the stipe roughened by the persistent minute warty bases, lamina 30 cm or longer, 10-15 cm broad, oblong-lanceolate, acuminate, not narrowed towards the base, pinnate; *pinnae* about 20 pairs, short-petiolate, spread, alternate, separated below by sinuses of the same width as the pinnae, 7.5-10 cm long, 1 cm broad, subfalcate-lanceolate, acuminate, base unequal, obliquely cut away below, with a free, or adnate ovate acute auricle on the upper side, margin varies from regularly serrate, or lobulato-crenate with stout cuspidate teeth even to pinnate; *texture* coriaceous, rather lustrous, rachis densely clothed in black subulate scales, both sides glabrous, dry brownish; *veins* immersed, indistinct, pinnate; *sori* uniseriate, midway between the costa and margin, often irregularly biseriate, indusium large, firm, gray, deciduous.

Szechuan: Mt. Omei, *Faber 1040* (type); *Brown137; S. C. Chen 30044, 10068,* alt. 1300, August 28, 1953; *R. C. Ching 174; T. C. Peng 27; Z. C. Chen 322;* Nanchuan, *W. P. Feng 5725.* Kweichow: Pin-fa, *Cavalerie 328;* Kwei-yang, *Cavalerie 2641.* Yunnan: Hong-pa, *Ducloux 5091.*

An endemic species in West China. In general habit and degree of pinnation of leaves, it most closely resembles the large form of *P. otophorum* (Franch.) Bedd., from which, however, it can be easily distinguished, besides the generally larger size, by the pinnae being more widely separated by sinuses, the gradually acuminate apex and, above all, by the shortly cuspidate teeth along the margin. *P. otophorum* Franch. has, as a rule, fronds of much smaller size, shorter and contiguous pinnae with short-acuminate apex and, above all, longer spiny teeth along the margin. As to the degree of pinnation of leaves, the two species vary in almost the same manner.

From ample material on hand, four closely related forms have been observed: 1, forma **integra,** having entire pinnae with regularly and finely cuspidate-serrate margin; 2, forma **typica,** having pinnae with a free ovate acute auricle at the anterior base; 3, forma **bipinnatifida,** having, besides a free anterior pinnule, the pinnae deeply pinnatifid, as represented by *Polystichum praelongatum* Christ, based on *Cavalerie No. 2641* from Kweichow and, lastly, forma **bipinnata,** a fully bipinnate form of larger size with many free pinnules, of which the anterior basal one much the largest, to 1.3 cm long, erect and appressed against the rachis and its anterior base may have an additional adnate lobule.

Plate 244. 1. Habit sketch of f. *typica* (natural size). 2. Pinna of f. *typica* (× 2). 3. Scale from the base of stipe (× 20). 4–5. Sporangium with spores (× 100). 6. Pinna of f. *integra* (natural size). 7. Pinna of f. *bipinnata* (natural size).

第 244 圖　革葉耳蕨

Plate 244. POLYSTICHUM XIPHOPHYLLUM (Baker) Diels

第 二 百 四 十 五 圖

三 叉 耳 蕨 (三 叉 蕨 科)

POLYSTICHUM TRIPTERON (Kunze) Presl

根狀莖短而直立，通常粗大而有老的葉柄基部覆蓋着；葉簇生，柄長 12—25 厘米，禾稈色，質頗軟弱，基部有密生的，上部有疏生的深棕色寬披針形的鱗片，葉體長 22—25 厘米，基部寬 5—7 厘米，一回羽狀，而基部一雙羽片大大伸長張開，並且有如上部一樣的羽狀；基部一對以上的羽片 20—40 對，開展，長 2.5—3 厘米，寬 9—12 毫米，均勻排列，披針形，漸尖頭，基部較闊，不等形，下方斜切，上方截形，並爲耳形，耳片爲卵形，急尖，有鋸齒，上邊緣爲片狀銳裂或爲大鋸齒，下邊緣有幾個倒伏的大鋸齒；基部一對羽片伸長到 6—10 厘米，寬不及 1 厘米，有 6—10 對同形的而較小的小羽片，邊緣有同樣的鋸齒；葉爲草質，乾後爲淡綠色，中軸及葉之下面有淡棕色卵形薄鱗片；葉脈在耳片爲羽狀，其餘爲分叉，明顯；子囊羣小，一列，位於中肋與邊緣中間，生於每脈的上方的一小脈之頂端，囊羣蓋大，膜質，有圓鋸齒，宿存。

分佈：本種在中國分佈很廣，從東北林區向南經河北，山東，河南，湖南，湖北，四川，貴州，達廣西，廣東，江西，浙江，江蘇北部（海州）及安徽南部高山林下。日本及朝鮮也產。

本種爲耳蕨屬一個最特出的種，由於它的基部一對羽片如兩臂式的特別伸長張開並爲羽狀，它在形態上恰恰處於一回羽狀葉的對生耳蕨（*P. deltodon* (Baker) Diels）和二回羽狀的 *P. setiferum* (Forsk.) Woyar 之間，實爲聯結兩組的橋樑，也爲一回羽狀種過渡到二回羽狀種的中間形式。

同本種極相近的一種，或者可視爲本種的一個地理型是台灣耳蕨(*Polystichum Hancockii* (Hance) Diels)，它的形體較細瘦，基部一對羽片只比上部的稍爲向兩側伸長，具少數幾對較小的小羽片，或者有時很少伸長。早田藏文氏曾根據基部一對羽葉的不同長度，曾給以幾個不同的名稱，實是多餘的事。

圖註：1. 本種全形（自然大）。 2. 羽片，表示葉脈及子囊羣位置（放大 2 倍）。 3. 葉柄基部的鱗片（放大 20 倍）。 4. 囊羣蓋（放大 20 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 245

POLYSTICHUM TRIPTERON (Kunze) Presl

ASPIDIACEÆ

POLYSTICHUM TRIPTERON (Kunze) Presl, Epim. Bot. 58. 1849; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1:** iv. 191. 1899; C. Chr. Ind. Fil. 589; Hand.-Mzt. Symb. Sin. **6:** 27. 1929; Ogata, Ic. Fil. Jap. **7:** t. 342. 1936.

Aspidium tripteron Kunze in Bot. Zeit. **1848**: 569; Mett. Farngatt. Pheg. u. Asp. n. 118. 1858; Hook., 2nd. Cent. Ferns t. 56. 1861; Hook. & Bak. Syn. Fil. 254. 1874; Christ, Farnkr. d. Erde 237. 1897.

Dryopteris triptera O. Ktze. Rev. Gen. Fil. **2**: 814. 1891.

Ptilopteris triptera Hayata in Bot. Mag. Tokio **41**: 706. 1927.

Aspidium tripteris Eaton in Perry, Narr. Exp. to China **2**: 330. 1856.

Rhizome short, erect, usually thick and covered with bases of old stipes; *fronds* caespitose, stipe 12-25 cm long, stramineous, rather soft, densely near the base and sparsely upward clothed in dark brown broadly lanceolate scales, lamina 22-35 cm long, 5-7 cm broad above the base, simply pinnate with the basal pair of pinnae always greatly lengthened out to 10 cm or more long and again similarly pinnate as the upper part; *pinnae* in the central main branch 20-40 pairs, patent, 2.5-3.5 cm long, 9-12 mm broad, regularly spaced, lanceolate and acuminate from the broader unequal base, which is cut straight or oblique below, truncate and auricled above, the auricle ovate, acute, serrate, the upper margin lobato-incised or coarsely serrate, while the lower margin with a few large linear, decumbent teeth; the *basal pair of pinnae* consists of 6-10 pairs of smaller pinnules of the same shape as the pinnae in the central part, 6-20 mm long, less than 1 cm broad, margin similarly serrate; *texture* herbaceous, dry light green, rachis and under side moderately clothed in light brown, ovate, thin scales; *veins* pinnate in the anterior side of the base, forked upward and below the costa, distinct; *sori* small, terminal on the anterior basal veinlet of each group, uniseriate between the costa and margin, indusium large, membranaceous, crenate and persistent.

A common fern in China, numerous specimens have been seen from Manchuria, Hopei, Shantung, Honan, Hunan, Szechuan, Kweichow, Kwangsi, Kwangtung, Kiangsi, Chekiang, Northern Kiangsu and Southern Anhwei Provinces.

Also known from Japan and Korea.

This is a peculiarly distinct species because of the lengthening out of the basal pair of pinnate pinnae, and, in the degree of pinnation, it stands exactly midway between the groups of simply pinnate *P. deltodon* (Bak.) Diels and of bipinnate *P. setiferum* (Forsk.) Woyar.

A closely related species, or perhaps be better considered as a geographic race is *Polystichum Hancockii* (Hance) Diels from Taiwan and also Kwangtung, which is characterized by much slender habit with smaller pinnae, of which the basal pair is very short with only a few pairs of small pinnules. From Taiwan, forms with basal pair of pinnae remains practically the same as the upper ones, or only slightly lengthened out have also been observed and given different names by Hayata.

Plate 246. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 2). 3. Scale from the base of stipe (× 20). 4. Indusium (× 20). 5–6. Sporangium with spores (× 100).

第 245 圖　三叉耳蕨

Plate 245. POLYSTICHUM TRIPTERON (Kunze) Presl

第 二 百 四 十 六 圖

馬 祖 耳 蕨 (三 叉 蕨 科)

POLYSTICHUM TSUS-SIMENSE (Hooker) J. Smith

根狀莖短粗而直立，有老葉柄的基部瓦覆；葉簇生，柄長 15—25 厘米，較爲細長，深禾稈色，有大而深棕色的披針形鱗片，混以淡黑色的鑽狀鱗片，葉體長 20—30 厘米，寬 10—15 厘米，卵狀長圓形，漸尖頭，基部不變狹，二回羽狀，頂部爲一回羽狀；羽片大約 15—20 對，彼此接近，亞鐮刀形，漸尖頭，長 5—9 厘米，有柄，基部極不等，下方斜切，上方膨大並爲截形，一回羽狀，頂部爲片狀羽裂；小羽片接近或亞瓦覆狀排列，橢圓長圓形，急尖頭，有短尖頭，全緣或通常有細尖頭鋸齒，基部上方的一個小羽片特大，靠近中軸，它的基部上方也爲尖耳形，邊緣有短尖頭的鋸齒或常爲片狀羽裂；基部一對羽片通常和它上面一對等長，亞水平開展；葉爲亞革質，乾後爲淡棕色或淡綠色，中軸及中肋的下面有淡黑色或煤黑色鑽狀堅質鱗片密生，上面光滑，下面幼時有纖維狀鱗片，後變爲頗光滑；子囊羣小，每小羽片有 2—4—6 對，中生，生於每羣葉脈的上方一小脈的頂端，囊羣蓋圓形，灰色，質堅，全緣，最後脫落。

這是耳蕨屬的一個普通的蕨種，長江以南各省包括雲南，四川，貴州，湖北，湖南，江西，福建，浙江，安徽南部常見，向北分佈至秦嶺的太白山。日本，朝鮮和越南北部也產。

本種的形體大小變異很大，模式標本採自朝鮮南部的馬祖島，形體較小，但顯然和日本及中國產的形體較大的植物同屬一種。中井猛之進氏（日本植物學雜誌 39 卷 117 頁）曾把此種和原產日本的 *Polystichum polyblepharum* Presl 混同起來，認爲是同物異名，這是錯誤的，因爲兩種截然不同。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，有小羽片着生，表示葉脈及子囊羣位置（放大 4 倍）。 3. 葉柄基部的鱗片（放大 30 倍）。 4—5. 中軸上的鱗片（放大 10 倍）。 6. 囊羣蓋（放大 20 倍）。 7—8. 孢子囊及孢子（放大 100 倍）。

PLATE 246

POLYSTICHUM TSUS-SIMENSE (Hooker) J. Smith

ASPIDIACEÆ

POLYSTICHUM TSUS-SIMENSE (Hooker) J. Smith, Hist. Fil. 219. 1875; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1:** iv. 191. 1899; Hand.-Mzt. Symb. Sin. **6:** 27. 1929; Ogata, Ic. Fil. Jap. **2:** t. 98. 1929; C. Chr. Ind. Fil. Supp. III. 165. 1933.

Aspidium tsus-simense Hooker, Sp. Fil. **4**: 16 t. 220. 1862; Miq. Prol. Fl. Jap. 340. 1867; Fr. et Sav. Enum. Pl. Jap. **2**: 231. 1876.

Polystichum lobatum var. *Tsus-simense* C. Chr. Ind. Fil. 583. 1905.

Aspidium monotis Christ in Bull. Bot. Soc. Ital. **1901**: 294.

Polystichum monotis C. Chr. Ind. Fil. 584. 1905.

Rhizome short, thick, erect, imbricately covered with the bases of old stipes; *fronds* caespitose, stipe 15-25 cm long, rather slender, dark stramineous, clothed with large, dark brown, lanceolate scales mixed with subulate blackish ones, lamina 20-30 cm long, 10-15 cm broad, ovate-oblong, gradually acuminate, base not narrowed, bipinnate below the simply pinnate apex; *pinnae* about 15-20 pairs, close, obliquely patent, subfalcate, acuminate, 5-9 cm long, petiolate, base strongly unequal, oblique below, acroscopically produced and truncate above, pinnate under lobato-pinnatifid apex; *pinnules* contiguous or subimbricate, elliptic-oblong, acute, mucronate, entire or often with minute mucronate serrature, the anterior basal one much the largest, erect, close to the rachis, anterior base sharply auricled, margin cuspidato-serrate or often again lobato-pinnatifid, the basal pair of pinnae usually as long as those next above, subhorizontally patent; *texture* subcoriaceous, dry brownish or greenish, rachis and the lower part of costa of pinnae beneath copiously clothed in firm, blackish, or coal-black subulate scales, glabrous above, under side fibrillose when young, and becoming quite glabrous at last; *veins* pinnate or forked in the pinnnule, indistinct on both sides; *sori* small, 2-4-6 pairs to each pinnule, medial, terminal on the anterior basal veinlet of each group, indusium orbicular, gray, firm, entire, falling off at last.

Another common fern in China, to the south of Yangtze; numerous specimens have been seen from Yunnan, Szechuan, Kweichow, Hupeh, Hunan, Kiangsi, Fukien, Chekiang, and southern part of Anwhei, northwardly to the southern part of Shensi (Tai-pei Shan).

Also Japan, Korea and Tonkin (Chapa).

The type of the species, from Tsu-Shima in Southern Korea, represents rather a small form, while most of the specimens seen from Japan and China are generally much larger with the anterior basal pinnule of each pinna much larger and pinnatifid above the anterior basal auricle.

Nakai (Bot. Mag. Tokio **39:** 117) wrongly reduced the present species as a synonym of the Japanese *Polystichum polyblepharum* Presl, because he thought the two species are identical. I saw types of both species and found that they are very different, as was also pointed out by H. Handel-Mazzetti (Symb. Sin. **6:** 27). On the other hand, I am strongly inclined to consider the present species as being identical with the South African **Polystichum luctuosum** (*Aspidium luctuosum* Kze.) Ching, comb. nov., as was first proposed by Hope. (Journ. Bomb. Nat. Hist. Soc. **3:** 475).

Plate 246. 1. Habit sketch (natural size). 2. A part of pinna with pinnules, showing venation and sori (× 4). 3. Scale from the base of stipe (× 30). 4–5. Scales from the rachis (× 10). 6. Indusium (× 20). 7–8. Sporangium with spores (× 100).

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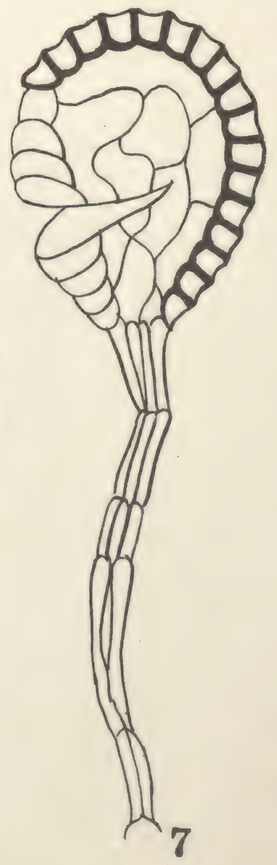
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3

第 246 圖　馬祖耳蕨

Plate 246. POLYSTICHUM TSUS-SIMENSE (Hooker) J. Smith

第 三 百 四 十 七 圖

單葉鞭葉蕨(三叉蕨科)

CYRTOMIDICTYUM BASIPINNATUM (Baker) Ching

根狀莖短而直立，頂端密覆棕色卵形漸尖的大鱗片，邊具睫毛；葉簇生，直立或張開，柄細長，長 8—14 厘米，有同樣和張開的鱗片；能育葉爲線狀披針形，長漸尖頭，向基部幾不變狹，長 15—20 厘米，寬 2.5—3.5 厘米，下部羽裂幾達中軸，向上部羽裂較淺；裂片很多，接近，開展，下部的爲長圓卵形，急尖頭，全緣，長 1.2—1.4 厘米，寬 7 毫米，上方不爲耳形突起，葉體頂部漸狹，全緣；亞革質，乾後爲棕色，上面光滑，下面連葉軸被有鱗片；葉脈不明顯，羽狀，每脈爲二叉或少爲三叉，小脈斜出，向上方都達於邊緣；子囊羣生中肋兩邊，各爲一列，中央生，無囊羣蓋；不育葉的體形同於能育葉，通常羽裂較淺，有時爲單葉，下部葉緣爲波狀，中肋頂端延長成一條無葉的鞭狀匍匐莖，頂端向下着地，生出幼株。

產地：廣東北江特有種。

這個獨特的蕨種到現在爲止，只見於廣東北部，從現有材料看，是一個稀有的蕨種。

圖註：1. 本種全形（自然大）。 2. 葉體的一部，表示葉脈及子囊羣（放大 3 倍）。 3. 葉柄基部的鱗片（放大 40 倍）。 4. 葉下面的鱗片（放大 40 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 247

CYRTOMIDICTYUM BASIPINNATUM (Baker) Ching

ASPIDIACEÆ

CYRTOMIDICTYUM BASIPINNATUM (Baker) Ching in Acta Phytotax. Sinica **6:** 262 t. 51. 1957.

Aspidium basipinnatum Baker in Journ. Bot. **1889**: 176; Christ in Warburg, Mons. 77. 1900.

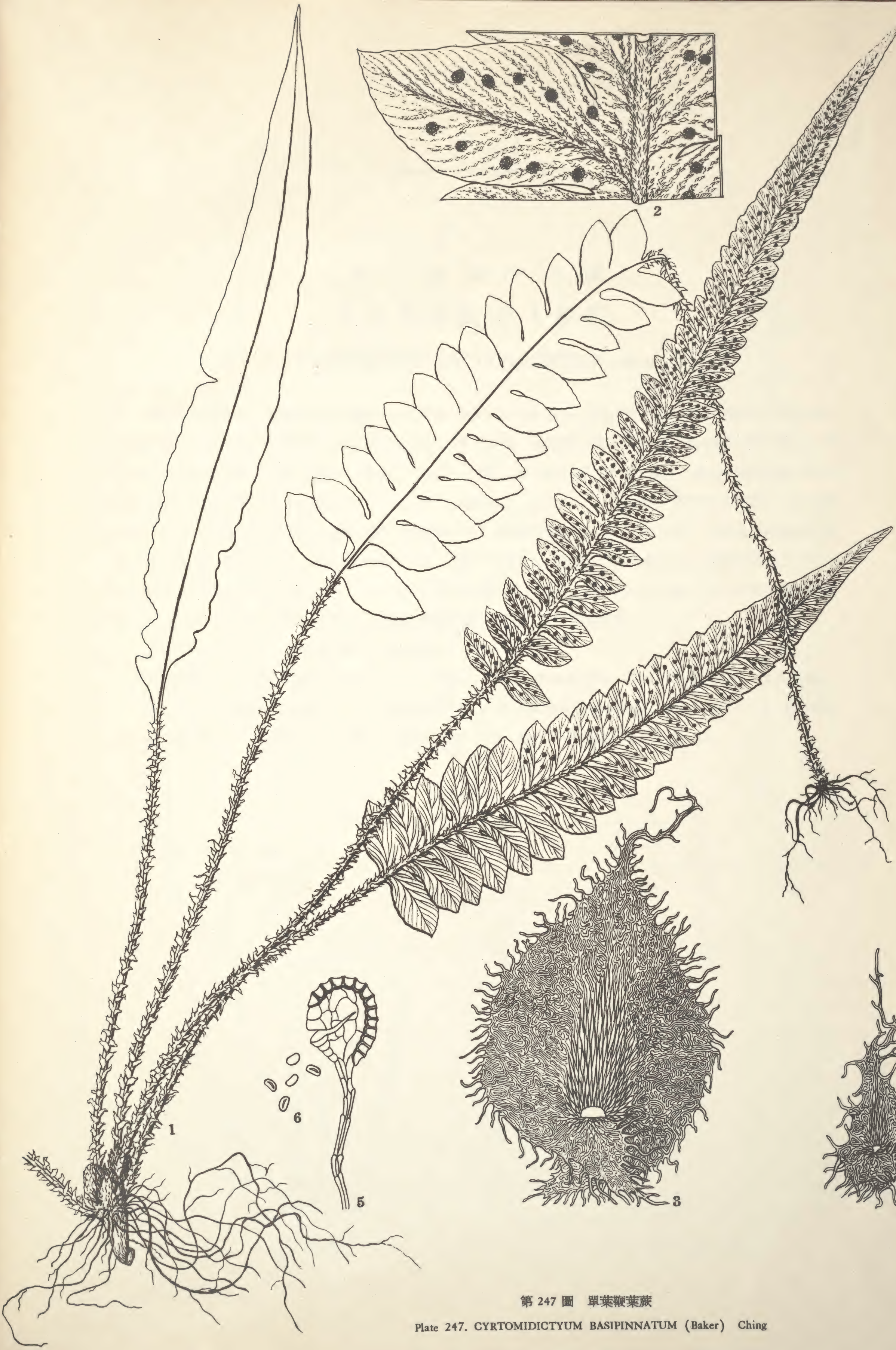
Polystichum basipinnatum Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1**: iv. 189. 1899; C. Chr. Ind. Fil. 579. 1905.

Rhizome short, erect, clothed at the growing tip in dense large brown and broadly ovate, acuminate, fimbriate *scales; fronds* tufted, upright or spreading and nodding, stipe slender, 8-14 cm long, copiously covered with similar spreading scales, *fertile lamina* linear-lanceolate, gradually acuminate, not narrowed towards base, 15-20 cm long, 2.5-3.5 cm broad, pinnatifid at the base almost down to the rachis but leaving a broad wing along the rachis upwards; *segments* numerous, close, patent, oblong-ovate, acute, entire, 1.2-1.4 cm long, 7 mm broad, not auricled in the anterior base, the apical part gradually tappering and entire; *texture* subcoriaceous, dry brown, glabrous above, scaly over the lower side and rachis; *veins* in segments obscure, close, all forked or rarely triforked with very obliquely ascending veinlets reaching the margin; *sori* medial and uniseriate on each side of costa, exindusiate. The *sterile lamina* similar to the fertile ones, usually less deeply pinnatifid or sometimes simple with wavy margin below, rachis lengthening out into a long whip-like nodding stolon and viviparous at the apex.

Kwangtung: North River, ex Herb. Bot. Gard. Hongkong *No. 103* (type); North River, ex Herb. Bot. Gard. Hongkong *No. 209; C. G. Matthew,* January 4, 1904 and November 23, 1906; *Gerlach;* Wang Yuen District, Fan Shiu Shan, *S. K. Lau 2640,* October 7-30, 1933.

A very distinct and endemic species known so far only from the northern part of Kwangtung, even where, judging from the herbarium material, it is a rare fern.

Plate 247. 1. Habit sketch (natural size). 2. Portion of lamina, showing venation and sori (× 3). 3. Scale from the base of stipe (× 40). 4. Scale from the under side of lamina (× 40). 5–6. Sporangium with spores (× 100).



第 247 圖　單葉鞭葉蕨

Plate 247. CYRTOMIDICTYUM BASIPINNATUM (Baker) Ching

第二百四十八圖

卵形鞭葉蕨(三叉蕨科)

CYRTOMIDICTYUM CONJUNCTUM Ching

根狀莖短而直立，和葉柄都被有鱗片；葉簇生，柄長 15—20 厘米，鱗片大，棕色，卵狀披針形，長尾尖頭，邊有睫毛，宿存；能育葉體長 15—20 厘米或稍長，寬 4 厘米，披針形，基部不變狹，向頂端爲漸尖頭，一回羽狀；羽片很多（約 20 對），接近，開展，下部 5—7 對，與中軸分離，有短小葉柄，其餘均或多或少合生，基部一對和上方各對等長或稍長，長 2—2.3 厘米，長圓卵形，急尖頭，不具短尖，基部下方斜形，上方呈圓耳形，全緣，多少呈反折波狀；葉爲革質，乾後爲棕色，葉軸密覆鱗片，羽片上面光滑，下面被小而緊貼的鱗片，邊有睫毛，卵形尾尖頭；葉脈不明顯，分離，有時下部結合，羽狀，或向頂端分叉，每組的基部上方一小脈向外不到達邊緣；子囊羣小而圓形，中央生，在中肋兩側各爲 1 列，或在基部上方爲 2 列；不育葉與能育葉同形，有較少的羽片，爲寬缺刻分開，葉軸向頂端延長成鞭狀有鱗片的匍匐莖，

產地：江西西北部，宜豐縣，黃崗山麓特產。

本種形體頗似單葉鞭葉蕨 *C. basipinnatum* (Baker) Ching，但葉爲羽狀，基部上方爲亞耳形，故易區別。

圖註：1. 本種全形（自然大）。 2. 能育葉的羽片，表示葉脈及子囊羣位置（放大 3 倍）。 3. 不育葉的羽片(放大 3 倍)。 4. 葉柄基部的鱗片（放大 30 倍）。 5. 羽片下面的鱗片（放大 30 倍）。

PLATE 248

CYRTOMIDICTYUM CONJUNCTUM Ching

ASPIDIACEÆ

CYRTOMIDICTYUM CONJUNCTUM Ching in Acta Phytotax. Sinica **6:** 263. t. 52. 1957.

Polystichum conjunctum Ching in herb.

Rhizome short, erect, densely radicose; *fronds* caespitose, spreading or nodding, stipe 15-20 cm long, clothed throughout in dense, large, brown, ovate-acuminate, ciliate scales with a long cauda, the *fertile lamina* 15-20 cm long or longer, 4 cm broad, lanceolate, not narrowed at base, gradually acuminate, simply pinnate; *pinnae* about 20 pairs, contiguous, patent, the lower 7-10 pairs free, petiolulate, the upper ones more or less adnate under the pinnatifid apical part, the basal pair as long as, or slightly longer than those next above, 2-2.3 cm long, 1 cm broad, ovate-oblong, acute, not mucronate, base subequal, round-cuneate below, rather bluntly auricled and truncate above, margin entire, or more or less repando-undulate; *texture* sub-coriaceous, dry brown, rachis copiously scaly, naked above and copiously clothed in minute, appressed, ovate-caudate, ciliate scales on the under side of pinnae; *veins* obscure, free or occasionally joint in the lower part, in pinnate groups, or forked towards apex, of which the anterior basal veinlet stops short far below the margin; *sori* small, rounded, medial and uniseriate on each side of costa, or biseriate near the base above, dorsal on the anterior basal veinlet of each group. The *sterile fronds* similar to the fertile with less pairs of pinnae separated from each other by broad sinuses, axis prolongated at apex into a long whip-like densely scaly stolon.

Northwestern Kiangsi: I-feng Hsien, Hwang-kan Shan, *Hsiung Yao-ko 6466*, Oct. 25, 1947, at the foot of cliff, rare.

A distinct local species, closely related to *C. basipinnatum* (Baker) Ching, differing in the pinnate fronds having free pinnae in the lower part, which are slightly auricled on the upper side of the base.

Plate 248. 1. Habit sketch (natural size). 2. Pinna from the fertile frond, showing venation and sori (× 3). 3. Pinna from the sterile frond (× 3). 4. Scale from the basal part of stipe (× 30). 5. Scale from the under side of pinna (× 30).

第 248 圖　卵形鞭葉蕨

Plate 248. CYRTOMIDICTYUM CONJUNCTUM Ching

第二百四十九圖

鞭葉蕨(三叉蕨科)

CYRTOMIDICTYUM LEPIDOCAULON (Hooker) Ching

根狀莖短而向上，有密的根叢；葉簇生，大都開展或伏地，亞二型，能育葉的柄長 15—30 厘米，基部以上直徑 2.5 毫米，有大卵形的包着或亞覆瓦狀的軟質棕色鱗片密生，基部爲心臟形，邊緣有長而密的睫毛，葉體長同葉柄，寬 8—15 厘米，長矩圓形到寬矩圓披針形，一回羽狀，頂部爲羽狀深裂的漸尖頭，向基部不變狹；羽片 8—15 對，具短小柄，或向上幾無柄，開展，互生，有寬缺刻分開，基部一對等長或罕比上方的稍長，鐮狀披針形，一般長 5.5—10 厘米，寬 1.2—1.8 厘米，漸尖頭，全緣，基部不等，下方斜切，上方爲耳狀尖三角形突起；葉爲厚紙質或亞革質，乾後棕色，葉軸與葉柄有同樣的鱗片密生，羽片上部光滑，下面散生伏貼的薄質卵狀披針形而邊有長睫毛的鱗片，中肋明顯，上面稍凹陷，下面隆起；葉脈不明顯，斜出，小脈羽狀成組，每組的基部上方一脈向外止於中途，其他的都到達邊緣，分離，但有時下部葉脈連結；子囊羣小而圓，背生於每組的 2—3 條小脈上，在中肋兩邊爲 2 列，或在耳形突起處爲不規則的三列；不育葉的柄遠較細長，並有鱗片，葉體較能育葉爲狹，羽片數也較少，形體也較小，彼此分離較遠，中軸頂端延伸成一無葉而有鱗片的鞭狀匍匐莖，頂端生一胞芽，着地後行無性繁殖。

分佈：中國東部，包括福建，江西，湖南，安徽的南部以及接近浙江邊境的江蘇南部。日本與朝鮮也產。過去日本學者曾從台灣報告此種，但據了解，不像本種，而似爲下一種。

圖註：1. 本種全形（自然大）。 2. 羽片的一部，表示葉脈及子囊羣位置（放大 3 倍）。 3. 葉柄基部的鱗片（放大 20 倍）。 4. 羽片下面的鱗片（放大 20 倍）。 5—6. 孢子囊及孢子（放大 100 倍）。

PLATE 249

CYRTOMIDICTYUM LEPIDOCAULON (Hooker) Ching

ASPIDIACEÆ

CYRTOMIDICTYUM LEPIDOCAULON (Hooker) Ching in Bull. Fan. Mem. Inst. Biol. Bot. Ser. **10:** 162. 1940; in Acta Phytotax. Sinica **6:** 264 t. 53. 1957.

Aspidium lepidocaulon Hooker, Sp. Fil. **4**: 12 t. 217. 1862; Hook. & Bak. Syn. Fil. 250. 1874; Fr. et Sav. Enum. Pl. Jap. **2**: 230. 1876; Palibin in Acta Hort. Bot. Petrop. **11**: 41. 1901.

Polystichum lepidocaulon J. Sm. Ferns Brit. & Fore. 286. 1866; Diels in Engl. u. Prantl, Nat. Pflanzenfam. **1**: iv. 189. 1899; C. Chr. Ind. Fil. 582. 1905; Ching in Sinensia **3**: 331. 1933; Ogata, Ic. Fil. Jap. **5**: t. 246. 1933; DeVol, Ferns East. China 78. 1945 (pro parte).

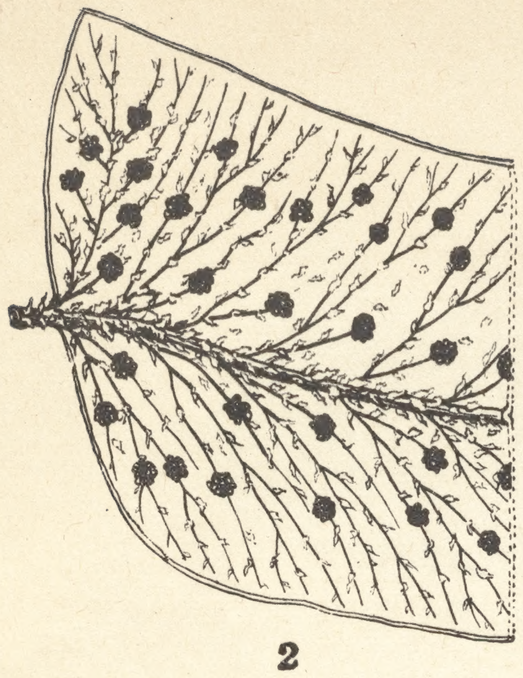
Dryopteris lepidocaula O. Ktze. Rev. Gen. Pl. **2**: 812. 1891.

Rhizome short, ascending, densely radicose; *fronds* tufted, spreading and nodding, stipe of the *fertile frond* 15-30 cm long, about 2.5 mm across above the base, copiously clothed in large, brown, ovate, clasping or subimbricating, ciliate *scales* with cordate base, lamina as long as the stipe, 8-15 cm broad, elongate-oblong to broadly oblong-lanceolate, apex acuminate and pinnatifid, base not narrowed, simply pinnate; *pinnae* 8-15 pairs, shortly petiolate, patent, alternate, separated by sinuses nearly as broad, the basal pair as long as those next above, or rarely somewhat longer, usually 5.5-10 cm long, 1.2-1.8 cm broad, lanceolate-falcate, gradually acuminate, entire throughout or nearly so, base unequal, round-cuneate below, truncate and with a triangular acute auricle above; *texture* thickly chartaceous or subcoriaceous, dry brownish, rachis similarly scaly as the stipe, glabrous above and quite copiously clothed below in scattered, appressed, thin and fimbriate scales, costa of pinnae slender, grooved above, and raised beneath; *veins* obscure, veinlets in pinnate group, of which the anterior basal one stops short about half way to the margin, occasionally the lower ones of the same group, or of the opposite groups joint, otherwise all free; *sori* small, dorsal on the lower 2-3 veinlets of each group, biseriate on each side of the costa, 3-seriate on the auricle. The *sterile frond* with much more slender and longer scaly stipe, lamina narrower than the fertile, usually consisting of less number of smaller pinnae, which are far apart from each other, the rachis is prolongated into a long whip-like scaly stolon, ended in a scaly bud as a means of vegetative reproduction.

At present this species has been reported from East China, including Fukien, Kiangsi, Hunan, the southern part of Anwhei and Kiangsu on the border of Chekiang. Also known from Japan and Korea: Tsu-Shima, *Wilford 565* (type), May, 1857.

Like the other species of the genus, the present fern also prefers to grow in wooded ravines by stream side at low elevations and often forms a dense patch, throwing out long wiry stolons in all directions.

Plate 249. 1. Habit sketch (natural size). 2. Portion of soriferous pinna, showing venation and position of sori (× 3). 3. Scale from the basal part of stipe (× 20). 4. Scale from the under side of pinna (× 20). 5–6. Sporangium with spores (× 100).



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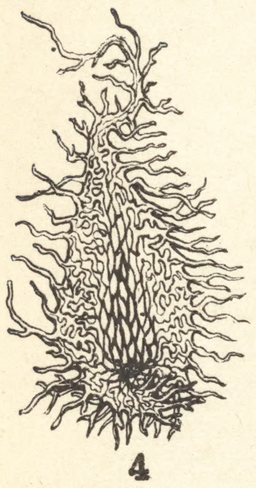

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6

5

第 249 圖　鞭葉蕨

Plate 249. CYRTOMIDICTYUM LEPIDOCAULON (Hooker) Ching

第二百五十圖

普陀鞭葉蕨(三叉蕨科)

CYRTOMIDICTYUM FABERI (Baker) Ching

在一般形體上，本種酷似鞭葉蕨（*C. lepidocaulon* (Hook.) Ching)，但較小，能育葉全長僅 15—35 厘米，(包括柄長 10—20 厘米)，葉體長 10—15 厘米，寬 5.5—10 厘米，分離羽片 5—8 對，通常長 4—5 厘米，寬 0.8—1 厘米，鐮狀披針形，基部上方也同樣有耳狀尖三角形突起，全緣；葉爲革質；葉脈不明顯，每組小脈 3—4 條，向外都達於邊緣；子囊羣中央生，在中肋兩側各爲一列，僅在基部上方耳形突起處有時爲亞二列；不育葉有較長的柄，羽片數較少，較小，疏生於長鞭狀而有鱗片的葉軸下部。

本種極似前種，過去曾當作同一種看待，但羽片較短，子囊羣在中肋兩側各爲一列，並每組的小脈都到達邊緣，故易區別。

分佈：浙江普陀，黃岩，杭州，鎮海及台灣，成塊狀生於常綠林下的溪溝邊。

圖註：1. 本種全形（自然大)。 2. 能育葉的羽片，表示葉脈及子囊羣位置（放大 2 倍)。 3. 葉柄基部的鱗片（放大 20 倍)。 4—5. 孢子囊及孢子（放大 100 倍)。

PLATE 250

CYRTOMIDICTYUM FABERI (Baker) Ching

ASPIDIACEÆ

CYRTOMIDICTYUM FABERI (Baker) Ching in Acta Phytotax. Sinica **6:** 265 t. 54. 1957.

Nephrodium Faberi Baker in Ann. Bot. **5**: 318. 1891.

Polystichum lepidocaulon C. Chr. Ind. Fil. 582. 1905; Ito, Illustr. Pl. Form. t. 64. 1931; DeVol, Ferns East. China 78. 1945 (pro parte).

Polystichum Faberi Ching in herb.

Very much similar to the preceeding species in general habit, but differs in smaller size, *fertile fronds* 15-35 cm long including stipes 10-20 cm long, lamina 10-15 cm long, 5.5-10 cm broad, free *pinnae* 5-8 pairs, 4-5 cm long, 8-10 mm broad, lanceolate-falcate, also with a triangular acute auricle on the anterior side of the base, entire; *texture* coriaceous; *veins* obscure, veinlets 3-4 in each group, *all* reaching the margin; *sori* medial and uniseriate on each side of the costa, dorsal only on the anterior basal veinlet of each group, or occasionally biseriate in the auricle. The *sterile frond* with longer stipe consisting of a few pairs of smaller and widely separated pinnae along the wiry and scaly rachis, which is prolongated into a very long stolon.

Chekiang: Ningpo, Puto Island, *E. Faber 205* (type); *J. Guckett, Forbes 739; H. Migo,* June 5, 1936; Whang-yen, *N. T. Wang,* August 10, 1944; Hangchow, Lingyin Monastery, *R. C. Ching* (1919), by stream side under broad-leaved forests; *Mary S. Matthew 10218* (pro parte); Cheng-hai, *K. K. Tsoong 135.* Also Taiwan.

A distinct local species, distinguished from *C. lepidocaulon* (Hooker) Ching chiefly in the much shorter pinnae, the uniseriate sori on each side of costa and in that all the veinlets of each group reach the margin. According to the photograph by Ito (l.c.), the plants from Taiwan reported as *Polystichum lepidocaulon* (Hooker) J. Sm. seems to belong to the present species.

Plate 250. 1. Habit sketch (natural size). 2. Pinna, showing venation and sori (× 2). 3. Scale from the basal part of stipe (× 20). 4–5. Sporangium with spores (× 100).

2

1

5 4

3

第 250 圖　普陀鞭葉蕨

Plate 250. CYRTOMIDICTYUM FABERI (Baker) Ching